

PONY

سلسلة كتب الأستاذ

Math

Main Book

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Primary

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Fractions, Decimals, and Proportional Relationships

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Theme

3

Fractions, Decimals, and
Proportional Relationships



Theme Units

Unit 7 Adding and Subtracting Fractions

Concept 7.1: Adding and Subtracting Fractions
With Unlike Denominators

Unit 8 Adding and Subtracting Mixed Numbers

Concept 8.1: Working With Mixed Numbers
Concept 8.2: Adding and Subtracting
Mixed Numbers with Unlike
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Unit 9 Multiplying and Dividing Fractions

Concept 9.1: Multiplying Fractions and Mixed
Numbers
Concept 9.1: Dividing Whole Numbers and
Unit Fractions

Unit

7

Adding and Subtracting Fractions

Concept

7.1

Adding and Subtracting Fractions with Unlike Denominators

Lesson

1

Finding Like Denominators Using the LCM

Learning Objectives:

By the end of this lesson, the student will be able to:

- Generate pairs of fractions with like denominators.
- Explain how to find like denominators.

Lessons

2-4

Using Models to Add and Subtract Fractions with Unlike Denominators

Learning Objectives:

By the end of these lessons, the student will be able to:

- Use models to represent addition and subtraction of fractions with unlike denominators.
- Add and subtract fractions with unlike denominators.
- Use benchmark fractions and number sense of fractions to assess the reasonableness of his/her answer.



Lesson

1

Finding Like Denominators Using the LCM

Finding Like Denominators Using the Lowest Common Multiple

1 One equivalent fraction:

Ex. Find the **smallest like denominator** for the following fractions:

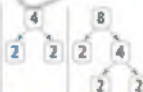
a $\frac{3}{4}$ and $\frac{5}{8}$

Find the LCM:

$$4 = 2 \times 2$$

$$8 = 2 \times 2 \times 2$$

$$\text{LCM} = 2 \times 2 \times 2 = 8$$



8 is the LCM of the two denominators.



Note:

Only one fraction has been changed because 8 is a multiple of 4.

b $\frac{2}{9}$ and $\frac{2}{3}$

Find the LCM:

$$3 = 3$$

$$9 = 3 \times 3$$

$$\text{LCM} = 3 \times 3 = 9$$



9 is the LCM of the two denominators.



Note:

Only one fraction has been changed because 9 is a multiple of 3.

1 Find the **smallest like denominator** for the following fractions:

a $\frac{3}{5}$ and $\frac{7}{10}$

$\rightarrow \frac{3}{5} = \frac{\quad}{\quad}$

$\frac{7}{10} = \frac{\quad}{\quad}$

b $\frac{5}{6}$ and $\frac{2}{3}$

$\rightarrow \frac{5}{6} = \frac{\quad}{\quad}$

$\frac{2}{3} = \frac{\quad}{\quad}$

c $\frac{1}{8}$ and $\frac{1}{2}$

$\rightarrow \frac{1}{8} = \frac{\quad}{\quad}$

$\frac{1}{2} = \frac{\quad}{\quad}$

d $\frac{3}{4}$ and $\frac{1}{12}$

$\rightarrow \frac{3}{4} = \frac{\quad}{\quad}$

$\frac{1}{12} = \frac{\quad}{\quad}$

2 Two equivalent fractions:

Ex. Find the **smallest like denominator** for the following fractions:

a $\frac{5}{6}$ and $\frac{3}{4}$

Find the LCM:

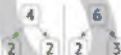
$$4 = 2 \times 2$$

$$6 = 2 \times 3$$

$$\text{LCM} = 2 \times 2 \times 3 = 12$$

12 is the LCM of the two denominators.

$$\frac{5}{6} = \frac{10}{12}$$



$$\frac{3}{4} = \frac{9}{12}$$

b $\frac{2}{3}$ and $\frac{3}{5}$

Find the LCM:

$$3 = 3$$

$$5 = 5$$

$$\text{LCM} = 3 \times 5 = 15$$

15 is the LCM of the two denominators.

$$\frac{2}{3} = \frac{10}{15}$$

$$\frac{3}{5} = \frac{9}{15}$$

Note:

Both fractions have been changed because 12 is the lowest common multiple of the two numbers 4 and 6.

Note:

If the two denominators are **prime numbers**, LCM is the **product** of them.

2 Find the **smallest like denominator** for the following fractions:

a $\frac{8}{15}$ and $\frac{7}{10}$

$$\rightarrow \frac{8}{15} = \frac{\quad}{\quad}$$

$$\frac{7}{10} = \frac{\quad}{\quad}$$

b $\frac{5}{6}$ and $\frac{1}{4}$

$$\rightarrow \frac{5}{6} = \frac{\quad}{\quad}$$

$$\frac{1}{4} = \frac{\quad}{\quad}$$

c $\frac{3}{4}$ and $\frac{1}{3}$

$$\rightarrow \frac{3}{4} = \frac{\quad}{\quad}$$

$$\frac{1}{3} = \frac{\quad}{\quad}$$

d $\frac{5}{14}$ and $\frac{8}{21}$

$$\rightarrow \frac{5}{14} = \frac{\quad}{\quad}$$

$$\frac{8}{21} = \frac{\quad}{\quad}$$

e $\frac{5}{12}$ and $\frac{2}{9}$

$$\rightarrow \frac{5}{12} = \frac{\quad}{\quad}$$

$$\frac{2}{9} = \frac{\quad}{\quad}$$

- 3** Aya and Duha are planting flowers in their garden. Aya has enough flowers to grow $\frac{2}{3}$ of her garden. Duha will plant flowers in $\frac{3}{5}$ of her garden, and they both want to write their fractions with a like denominator. Write both fractions with a like denominator.

Quiz

10

- 1** Choose the correct answer:

- a** The common denominator of the two fractions $\frac{3}{5}$ and $\frac{1}{2}$ is _____.
(2 or 5 or 12 or 10)
- b** 8 is a common denominator of the two fractions _____.
($\frac{1}{2}$ and $\frac{1}{3}$ or $\frac{1}{3}$ and $\frac{1}{4}$ or $\frac{1}{2}$ and $\frac{1}{4}$ or $\frac{1}{2}$ and $\frac{5}{8}$)
- c** The LCM for the two numbers 3 and 6 is _____. (6 or 3 or 9 or 12)
- d** The common denominator for $\frac{3}{4}$ and $\frac{5}{6}$ is _____. (6 or 8 or 12 or 3)

- 2** Complete the following:

- a** The LCM for any two prime numbers is their _____.
- b** $\frac{5}{8} = \frac{24}{\quad}$
- c** $\frac{1}{3}$ and $\frac{3}{\quad}$ will be $\frac{\quad}{12}$ and $\frac{9}{12}$. (With a like denominator)
- d** $\frac{7}{8}$ and $\frac{5}{12}$ will be $\frac{\quad}{\quad}$ and $\frac{\quad}{\quad}$. (With a like denominator)

- 3** Ganna read $\frac{1}{4}$ of her story, and Sara read $\frac{1}{2}$ of her story.

Write the two fractions with a like denominator.

Lessons 2-4

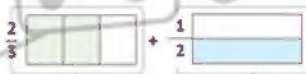
Using Models to Add and Subtract Fractions With Unlike Denominators

Adding and Subtracting Fractions With Unlike Denominators

1 Adding and Subtracting Fractions With Unlike Denominators Using Models:

a Add: $\frac{2}{3} + \frac{1}{2}$

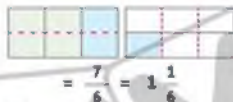
Represent both fractions using models.



Give both fractions a like denominator.



Add using the models.



b Subtract: $\frac{3}{4} - \frac{3}{8}$

Represent the largest (first) fraction using models.



Give both fractions a like denominator.



Subtract using the models.

$= \frac{3}{8}$

1 Find the result using the following models:

a $\frac{1}{3} + \frac{1}{6} =$

b $\frac{3}{10} - \frac{1}{5} =$

c $\frac{3}{4} + \frac{1}{3} =$

d $\frac{4}{5} - \frac{1}{2} =$



2 Adding and Subtracting Fractions With Unlike Denominators Using the LCM:

Solution steps:

- 1 Find the LCM for the denominators.
- 2 Replace these fractions with equivalent fractions with a like denominator.
- 3 Add or subtract, putting the answer in its simplest form if possible.

Ex. a Add $\frac{3}{8} + \frac{1}{6}$

$$\frac{3}{8} + \frac{1}{6} = \frac{9}{24} + \frac{4}{24} = \frac{13}{24}$$

Important!

The LCM for 6 and 8 is 24.

So $\frac{3}{8} = \frac{9}{24}$ and $\frac{1}{6} = \frac{4}{24}$

b Add: $\frac{3}{7} + \frac{1}{3}$

$$\frac{3}{7} + \frac{1}{3} = \frac{9}{21} + \frac{7}{21}$$

$$= \frac{16}{21}$$

Note that

The LCM for 7 and 3 is 21.

$$\frac{3}{7} = \frac{9}{21} \quad \cdot \quad \frac{1}{3} = \frac{7}{21}$$

c Subtract: $\frac{4}{9} - \frac{1}{3}$

$$\frac{4}{9} - \frac{1}{3} = \frac{4}{9} - \frac{3}{9}$$

$$= \frac{1}{9}$$

Note that

The LCM for 3 and 9 is 9.

$$\frac{4}{9} = \frac{4}{9} \quad \cdot \quad \frac{1}{3} = \frac{3}{9}$$

d Subtract: $\frac{3}{4} - \frac{1}{3}$

$$\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12}$$

$$= \frac{5}{12}$$

Note that

The LCM for 4 and 3 is 12.

$$\frac{3}{4} = \frac{9}{12} \quad \cdot \quad \frac{1}{3} = \frac{4}{12}$$

2 Find the result.

a $\frac{3}{4} + \frac{5}{12} =$ + =

b $\frac{7}{9} - \frac{1}{3} =$ =

Fractions, Decimals, and Proportional Relationships

c $\frac{3}{8} + \frac{5}{6} =$

+

=

d $\frac{8}{9} - \frac{1}{2} =$

-

=

e $\frac{1}{5} + \frac{1}{3} =$

+

=

f $\frac{2}{3} - \frac{1}{4} =$

-

=



10

1 Use the following models to complete.

a



+

+

=

=

b

x x x

-

-

=

=

2 Find:

a $\frac{1}{2} + \frac{2}{5} =$

b $\frac{3}{4} - \frac{5}{8} =$

c $\frac{1}{3} + \frac{1}{8} =$

d $\frac{5}{12} - \frac{1}{4} =$

Unit

8

Adding and Subtracting Mixed Numbers

8.1

Working with Mixed Numbers



1

Adding and Subtracting Mixed Numbers with Like Denominators

Learning Objectives

By the end of this lesson, the student will be able to:

- Add and subtract mixed numbers with like denominators



2

Finding Like Denominators of the Mixed Numbers

Learning Objectives

By the end of this lesson, the student will be able to:

- Generate pairs of mixed numbers with like denominators
- Explain how to find like denominators for mixed numbers



I ♥ Math



Lesson

Adding and Subtracting Mixed Numbers with Like Denominators

Remember

Improper fraction

Mixed number

Mixed number

Improper fraction

$$4 \times 2 + 1 = 9$$

$$2\frac{1}{4} = \frac{9}{4}$$

$$19 \div 5 = 3 \text{ R } 4$$

$$\frac{19}{5} = 3\frac{4}{5}$$

The same denominator without change

Rewriting mixed numbers in equivalent forms

Ex.

$$\frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{4}{5}$$

$$\frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{4}{5}$$

$$3\frac{4}{5} = 2\frac{9}{5}$$

$$3\frac{4}{5} = 1\frac{14}{5}$$

$$3\frac{4}{5} = 2\frac{9}{5} = 1\frac{14}{5} = \frac{19}{5}$$

Ex.

$$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$$

$$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$$

$$4\frac{1}{7} = 3\frac{8}{7}$$

$$4\frac{1}{7} = 2\frac{15}{7}$$

$$\frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{1}{7}$$

$$4\frac{1}{7} = 3\frac{8}{7} = 2\frac{15}{7} = 1\frac{22}{7} = \frac{29}{7}$$

$$4\frac{1}{7} = 1\frac{22}{7}$$

1 Complete the following:

a $3\frac{4}{5} = \frac{\quad}{\quad}$

b $2\frac{3}{7} = \frac{\quad}{\quad}$

c $1\frac{2}{9} = \frac{\quad}{\quad}$

d $7\frac{1}{2} = \frac{\quad}{\quad}$

e $\frac{11}{2} = \frac{\quad}{\quad}$

f $\frac{12}{7} = \frac{\quad}{\quad}$

g $\frac{13}{5} = \frac{\quad}{\quad}$

h $\frac{16}{3} = \frac{\quad}{\quad}$

2 Rewrite the given values in two other forms:

i $\frac{15}{7} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

b $\frac{28}{7} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

c $3\frac{1}{5} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

d $\frac{13}{5} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

1 Using Improper Fractions:

Solution Steps:

- 1 Convert mixed numbers into improper fractions
- 2 Perform addition or subtraction.
3. Convert an improper fraction (the result) into a mixed number in its simplest form.

Ex.

$$3\frac{1}{5} + 1\frac{3}{5} = \frac{16}{5} + \frac{8}{5} = \frac{24}{5} = 4\frac{4}{5}$$

Simplest form

$$4\frac{1}{5} - 2\frac{4}{5} = \frac{21}{5} - \frac{14}{5} = \frac{7}{5} = 1\frac{2}{5}$$

2 By Decomposing Mixed Numbers

Solution Steps:

- 1 Add/subtract the fraction.
- 2 Add/subtract whole numbers.
- 3 Put the result in the simplest form (Regrouping mixed numbers).

Ex.

$$\textcircled{a} 1\frac{3}{5} + 2\frac{4}{5} = 3\frac{7}{5} = 4\frac{2}{5}$$

$$1 + 2$$

$$\frac{3}{5} + \frac{4}{5}$$

$$3\frac{7}{5} = 3 + \frac{5}{5} + \frac{2}{5}$$

$$\textcircled{b} 4\frac{5}{8} - 2\frac{3}{8} = 2\frac{2}{8} = 2\frac{1}{4}$$

$$4 - 2$$

$$\frac{5}{8} - \frac{3}{8}$$

$$\frac{2}{8} = \frac{1}{4}$$

$$\textcircled{c} 7\frac{1}{3} - 2\frac{2}{3} = 6\frac{4}{3} = 2\frac{2}{3} + 4\frac{2}{3}$$

$$7\frac{1}{3} = 6 + \frac{3}{3} + \frac{1}{3}$$

$\frac{1}{3} - \frac{2}{3}$ can't be.
So, we regroup the minuend.

3 Find the result using the strategy you prefer, and simplify if possible

$$\textcircled{a} 2\frac{5}{6} + 6\frac{5}{6} =$$

$$\textcircled{b} 4\frac{1}{4} + 7\frac{3}{4} =$$

$$\textcircled{c} 3\frac{4}{5} + 1\frac{3}{5} =$$

$$\textcircled{d} 5\frac{7}{8} + 2\frac{5}{8} =$$

$$\textcircled{A} 3 \frac{7}{9} + 1 \frac{4}{9} =$$

$$\textcircled{B} 6 \frac{4}{5} + 2 \frac{1}{5} =$$

$$\textcircled{C} 7 \frac{1}{6} - 2 \frac{5}{6} =$$

$$\textcircled{D} 6 \frac{2}{7} - 5 \frac{4}{7} =$$

Finding the Unknown in Addition and Subtraction Problems

$$\textcircled{A} 1 \frac{1}{2} + a = 3 \frac{3}{4} \quad \rightarrow \quad a = 3 \frac{3}{4} - 1 \frac{1}{2} = 3 \frac{3}{4} - 1 \frac{2}{4} = 2 \frac{1}{4}$$

$$\textcircled{B} b + 3 \frac{1}{3} = 5 \frac{5}{6} \quad \rightarrow \quad b = 5 \frac{5}{6} - 3 \frac{1}{3} = 5 \frac{5}{6} - 3 \frac{2}{6} = 2 \frac{3}{6} = 2 \frac{1}{2}$$

$$\textcircled{C} 7 \frac{4}{5} - c = 1 \frac{1}{2} \quad \rightarrow \quad c = 7 \frac{4}{5} - 1 \frac{1}{2} = 7 \frac{8}{10} - 1 \frac{5}{10} = 6 \frac{3}{10}$$

$$\textcircled{D} d - 6 \frac{3}{9} = 8 \frac{2}{3} \quad \rightarrow \quad d = 6 \frac{3}{9} + 8 \frac{2}{3} = 6 \frac{3}{9} + 8 \frac{6}{9} = 14 \frac{9}{9} = 15$$

4 Choose from the given values to solve each equation:

$$\left(1 \frac{3}{8}, 1 \frac{2}{3}, \frac{2}{3}, 1 \frac{2}{3}, 2 \frac{2}{5}, 5 \frac{2}{4}, 6 \frac{2}{4} \right)$$

$$\textcircled{A} 3 \frac{1}{5} + \quad = 5 \frac{3}{5} \quad \textcircled{B} \quad + 4 \frac{2}{3} = 5 \frac{1}{3}$$

$$\textcircled{C} 2 \frac{4}{8} - \quad = 1 \frac{1}{8} \quad \textcircled{D} \quad + 1 \frac{3}{4} = 7 \frac{1}{4}$$

5 Find the value «X».

Ⓐ $1\frac{1}{8} + X = 7\frac{5}{8} \rightarrow X =$

Ⓑ $X + 1\frac{3}{4} = 5 \rightarrow X =$

Ⓒ $5\frac{4}{5} - X = 3\frac{1}{5} \rightarrow X =$

Ⓓ $X - 4\frac{2}{3} = 1\frac{2}{3} \rightarrow X =$



10

1 Choose the correct answer:

- Ⓐ $2\frac{1}{7} =$ $\frac{2}{7} + \frac{4}{7} + \frac{4}{7}$ or $\frac{1}{7} + \frac{1}{7} + \frac{1}{7}$ or $\frac{4}{4} + \frac{4}{4} + \frac{1}{7}$ or $\frac{2}{7} + \frac{1}{7}$
 Ⓑ $3\frac{1}{5} + 2\frac{1}{5} =$ $5\frac{1}{3}$ or $3\frac{2}{5}$ or $5\frac{2}{5}$ or $2\frac{3}{5}$
 Ⓒ $7\frac{4}{5} - 3\frac{1}{5} =$ $(4$ or $4\frac{3}{5}$ or $4\frac{5}{7}$ or $11)$

2 Complete the following:

- Ⓐ $3\frac{4}{5} =$ (As an improper fraction)
 Ⓑ $\frac{18}{7} =$ (As a mixed number)
 Ⓒ $3\frac{2}{9} + 4\frac{3}{9} =$

3 Find the value of «X»:

$X - 3\frac{1}{5} = 5$, then $X =$

Lesson

Finding Like Denominators of the Mixed Numbers

Find the Like Denominator Directly:

Ex. Rewrite the given mixed numbers with like denominators:

a $2\frac{3}{8}$ and $3\frac{1}{6}$

$2\frac{3}{8} = 2\frac{9}{24}$

and $3\frac{1}{6} = 3\frac{4}{24}$

Note Whole number doesn't change

Find LCM

$$8 = 2 \times 2 \times 2$$

$$6 = 2 \times 3$$

$$\text{LCM} = 2 \times 2 \times 2 \times 3 = 24$$

24 is the LCM of the two denominators.

b $6\frac{5}{12}$ and $1\frac{3}{4}$

$6\frac{5}{12} = 6\frac{5}{12}$

and $1\frac{3}{4} = 1\frac{9}{12}$

Find LCM

$$4 = 2 \times 2$$

$$12 = 2 \times 2 \times 3$$

$$\text{LCM} = 2 \times 2 \times 3 = 12$$

12 is the LCM of the two denominators.

1 Rewrite the given mixed numbers with like denominators:

a $1\frac{1}{5}$, $1\frac{3}{4}$

$1\frac{1}{5} =$

$1\frac{3}{4} =$

Find LCM

$$=$$

$$=$$

$$\text{LCM} =$$

b $2\frac{5}{12}$, $3\frac{6}{8}$

$2\frac{5}{12} =$

$3\frac{6}{8} =$

Find LCM

$$=$$

$$=$$

$$\text{LCM} =$$

③ $2\frac{13}{24}$, $2\frac{7}{18}$

$2\frac{13}{24} = \frac{49}{12}$, $2\frac{7}{18} = \frac{14}{9}$

④ $1\frac{15}{24}$, $1\frac{12}{16}$

$1\frac{15}{24} = \frac{39}{8}$, $1\frac{12}{16} = \frac{21}{8}$

Find LCM

$\frac{49}{12}$
LCM =

Find LCM

$\frac{39}{8}$
LCM =

Second way Put the Mixed Numbers in their Simplest Forms First:

Ex. Rewrite the given mixed numbers with like denominators:

① $8\frac{6}{12}$ and $3\frac{5}{15}$

6 is the LCM of the two denominators.

$8\frac{6}{12} = 8\frac{1}{2} = 8\frac{3}{6}$

and

$3\frac{5}{15} = 3\frac{1}{3} = 3\frac{2}{6}$

② $1\frac{9}{12}$ and $5\frac{3}{18}$

12 is the LCM of the two denominators.

$1\frac{9}{12} = 1\frac{3}{4} = 1\frac{9}{12}$

and

$5\frac{3}{18} = 5\frac{1}{6} = 5\frac{2}{12}$

2 Rewrite the given mixed numbers with like denominators

③ $1\frac{3}{15}$, $1\frac{3}{4}$

is the LCM of the two denominators.

$1\frac{3}{15} =$, $1\frac{3}{4} =$

Ⓐ $2\frac{8}{12} + 3\frac{6}{8}$

$=$ $\frac{\quad}{\quad}$ $=$

Is the LCM of the two denominators.

Ⓑ $2\frac{14}{24} + 2\frac{9}{18}$

$=$ $\frac{\quad}{\quad}$ $=$

Is the LCM of the two denominators.

Ⓒ $1\frac{15}{24} + 3\frac{12}{16}$

$=$

Is the LCM of the two denominators.

Note that putting a fraction in its **simplest form** always makes it easier to find the **common denominator**

Quiz

10

1 Choose the correct answer:

Ⓐ $2\frac{5}{10} = 2\frac{\quad}{2}$

(1 or 5 or 10 or 25)

Ⓑ $5\frac{3}{7} = 5\frac{9}{\quad}$

(3 or 7 or 21 or 9)

Ⓒ The LCM of 7 and 5 is

(15 or 21 or 35 or 12)

2 Complete the following

Ⓐ $\frac{12}{18} =$ (In the simplest form)

Ⓑ $4\frac{2}{9} = 4\frac{\quad}{18}$

Ⓒ The common denominator for $\frac{2}{6}$ and $\frac{3}{7}$ is

3 Rewrite the given mixed numbers with like denominators:

$4\frac{2}{9}$ and $5\frac{1}{6}$

$4\frac{2}{9} =$ $\frac{\quad}{\quad}$ and $5\frac{1}{6} =$ $\frac{\quad}{\quad}$

Unit

8

Adding and Subtracting
Mixed Numbers

8.2

Adding and Subtracting
Mixed Numbers with
Unlike Denominators

3

Using Models to Add and Subtract Mixed
Numbers

Learning Objective

By the end of this lesson, the student will be able to:

- Use models to represent addition and subtraction of mixed numbers with unlike denominators



4&5

Adding and Subtracting Mixed Numbers

Learning Objective

By the end of these lessons, the student will be able to:

- Add and subtract fractions and mixed numbers with unlike denominators



6

Story Problems with Mixed Numbers

Learning Objective

By the end of this lesson, the student will be able to:

- Solve story problems involving addition and subtraction of fractions and mixed numbers



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Lesson

Using Models to Add and Subtract Mixed Numbers

Using Models to Add Mixed Numbers with Unlike Denominators

Ex. Add $2\frac{2}{5} + 1\frac{1}{2}$

Represent each mixed number using models.



Divide the mixed numbers models by the same number of parts.



Then add



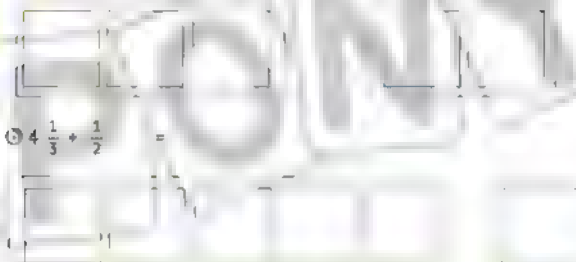
Ex. Add $2\frac{5}{9} + 3\frac{2}{3}$



$$2\frac{5}{9} + 3\frac{2}{3} = 6\frac{2}{9}$$

1 Use the following **models** to find:

Ⓐ $2\frac{3}{4} + 1\frac{1}{3} =$



Ⓑ $4\frac{1}{3} + \frac{1}{2} =$



Ex. Subtract $3\frac{1}{2} - 1\frac{2}{5}$

Represent the **greatest** (first) mixed number using models.

Divide the mixed numbers models by the **same** number of parts.



Then subtract

$$3\frac{1}{2} - 1\frac{2}{5} = 2\frac{1}{10}$$

Ex. Subtract. $5\frac{1}{6} - 3\frac{3}{4}$

$$5\frac{1}{6} - 3\frac{3}{4} = 1\frac{5}{12}$$



2 Use the following models to find.

Ⓐ $4\frac{1}{2} - 2\frac{1}{8} =$



Ⓑ $3\frac{1}{5} - 1\frac{1}{2} =$



Using Number Lines to Subtract Mixed Numbers

Start with the **smallest** number, and then move up the number line to reach the **greatest** number. The **distance** between the smallest and the greatest numbers is the **result** of the subtraction.

Ex. Subtract $5\frac{1}{4} - 3\frac{1}{6}$

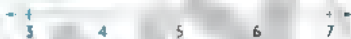
Start with: $3\frac{1}{6}$, then move up the number line to 4, then 5, and finally to $5\frac{1}{4}$



$$5\frac{1}{4} - 3\frac{1}{6} = \frac{5}{6} + \frac{1}{4} = \frac{10}{12} + \frac{3}{12} = 1 + \frac{13}{12} = 1 + 1 + \frac{1}{12} = 2\frac{1}{12}$$

3 Use the following number lines to subtract:

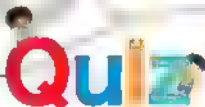
a $6\frac{1}{5} - 3\frac{4}{5} =$



b $2\frac{7}{8} - 1\frac{1}{2} =$



c $9\frac{1}{4} - 8\frac{3}{5} =$



10

1 Choose the correct answer:

- a The opposite model represents

$(\frac{7}{7} - 1\frac{1}{3})$ or $1\frac{1}{3} + \frac{1}{3}$ or $2\frac{2}{3} - 1$ or $2\frac{2}{3} - 1\frac{1}{3}$

- b The opposite model represents

$(3\frac{2}{4})$ or 3 or $4\frac{1}{4}$ or 5

c $3\frac{1}{5} - \frac{4}{5} =$

$(5\frac{2}{5})$ or $2\frac{2}{5}$ or $3\frac{2}{5}$ or 4

2 Complete the following:

a $3\frac{2}{5} + 4\frac{1}{5} =$

b $4\frac{7}{8} - 1\frac{1}{2} =$

c $4\frac{2}{7} - 3\frac{5}{7} =$

3 Use the following model to find the sum:

$2\frac{2}{5}$

$+ \frac{3}{5}$ $=$

Lessons

Adding and Subtracting Mixed Numbers

Convert Mixed Numbers Into Improper Fractions then Add/Subtract:

Mixed numbers	Improper fractions	Like denominator	Adding, then simplifying
① $1\frac{3}{4} + 2\frac{1}{3} =$	$\frac{7}{4} + \frac{7}{3} =$	$\frac{21}{12} + \frac{28}{12} =$	$\frac{49}{12} = 4\frac{1}{12}$

Mixed numbers	Improper fractions	Like denominator	Subtracting, then simplifying
② $6\frac{1}{3} - 2\frac{1}{2} =$	$\frac{19}{3} - \frac{5}{2} =$	$\frac{38}{6} - \frac{15}{6} =$	$\frac{23}{6} = 3\frac{5}{6}$

2 Add /Subtract then Decompose Mixed Numbers

Mixed numbers	Like denominator	Adding	Simplifying
① $1\frac{3}{4} + 2\frac{1}{3} \rightarrow$	$1\frac{9}{12} + 2\frac{4}{12} =$	$3\frac{13}{12}$	$= 4\frac{1}{12}$

Mixed numbers	Like denominator	Decompose	Subtracting
② $6\frac{1}{3} - 2\frac{1}{2} =$	$6\frac{2}{6} - 2\frac{3}{6} =$	$5\frac{8}{6} - 2\frac{3}{6} =$	$3\frac{5}{6}$

1 Find the result of each of the following using two different strategies:

① $4\frac{3}{5} - 2\frac{1}{3}$

1

2

Ⓐ $8\frac{1}{2} - 2\frac{3}{7}$

1

2

Ⓒ $7\frac{1}{2} - 2\frac{7}{8}$

1

2

Ⓓ $5\frac{7}{9} + 2\frac{2}{3}$

1

2

Ⓔ $9\frac{1}{6} + 3\frac{1}{3}$

1

2

Ⓕ $1\frac{2}{3} + 2\frac{2}{5}$

1

2

2 Find the missing numbers:

Ⓐ $a + 5\frac{5}{6} = 9\frac{1}{12} \rightarrow a =$

Ⓑ $8\frac{7}{10} - b = 4\frac{9}{20} \rightarrow b =$

Ⓒ $c - 1\frac{3}{4} = 7\frac{3}{44} \rightarrow c =$

Ⓓ $6\frac{7}{15} + d = 13\frac{3}{10} \rightarrow d =$

3 Adjusting the Mixed Number (Give and Take Strategy):

First: Addition

- Determine which mixed number is **closest** to being a whole number
- Decompose the other number into **two parts**, one of which completes this mixed number to be a whole number
- Take this part and **give** it to the other to make it a whole number

Ex.

$$\begin{aligned} \text{1 } 3 \frac{7}{8} + \frac{1}{4} &= 3 \frac{7}{8} + \frac{2}{8} \\ &= 3 \frac{7}{8} + \frac{1}{4} \\ &= 4 \frac{1}{8} \end{aligned}$$

$$\begin{aligned} \text{2 } 2 \frac{1}{2} + 1 \frac{5}{6} &= 3 \frac{3}{6} + 1 \frac{5}{6} \\ &= 2 \frac{3}{6} + \frac{1}{6} + 1 \frac{5}{6} \\ &= 2 \frac{2}{6} + 4 \frac{2}{6} = 4 \frac{1}{3} \end{aligned}$$

Second: Subtraction

- Always make the **subtrahend** a whole number
- Give both numbers the **same fraction** that makes the subtrahend a whole number, then perform the subtraction.

Ex.

$$\begin{aligned} \text{1 } 6 \frac{1}{8} - 3 \frac{3}{4} &= 6 \frac{1}{8} - 3 \frac{6}{8} \\ &= (6 \frac{1}{8} + \frac{7}{8}) - (3 \frac{6}{8} + \frac{2}{8}) \\ &= 6 \frac{3}{8} - 4 = 2 \frac{3}{8} \end{aligned}$$

$$\begin{aligned} \text{2 } 5 \frac{5}{6} - 2 \frac{1}{4} &= 5 \frac{10}{12} - 2 \frac{3}{12} \\ &= (5 \frac{10}{12} + \frac{2}{12}) - (2 \frac{3}{12} + \frac{9}{12}) \\ &= 6 \frac{7}{12} - 3 = 3 \frac{7}{12} \end{aligned}$$

3 Complete

$$\textcircled{a} 3 \frac{1}{3} + 1 \frac{5}{6} = \quad + \quad = \quad + \frac{1}{6} + 1 \frac{5}{6} = \quad + 2 =$$

$$\textcircled{b} 4 \frac{8}{9} + 1 \frac{1}{3} = \quad + \quad = \quad + \frac{1}{9} + \quad = 5 + \quad =$$

$$\textcircled{c} 4 \frac{1}{8} - 2 \frac{7}{8} = (\quad + \quad) - (\quad + \quad) = \quad - 3 =$$

$$\textcircled{d} 8 \frac{1}{5} - 7 \frac{9}{10} = (\quad + \quad) - (\quad + \quad) = \quad - \quad =$$



10

1 Choose the correct answer:

$$\textcircled{a} 6 \frac{2}{5}$$

$$(\frac{30}{5} \text{ or } \frac{32}{5} \text{ or } \frac{10}{6} \text{ or } \frac{8}{5})$$

$$\textcircled{b} 4 \frac{2}{6} + 3 \frac{4}{6} =$$

$$(1 \text{ or } 3 \frac{1}{6} \text{ or } 2 \frac{3}{6} \text{ or } 8)$$

$$\textcircled{c} \quad - 1 \frac{3}{4} = 1 \frac{2}{8}$$

$$(3 \text{ or } 2 \frac{1}{4} \text{ or } 2 \frac{6}{6} \text{ or } 2)$$

2 Complete the following:

$$\textcircled{a} \text{ If } x + 1 \frac{3}{5} = 3 \frac{4}{5}, \text{ then } x =$$

$$\textcircled{b} \text{ If } 4 \frac{2}{3} + y = 6 \frac{7}{9}, \text{ then } y =$$

$$\textcircled{c} 3 \frac{3}{4} = \frac{4}{4} + \frac{3}{4} +$$

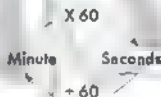
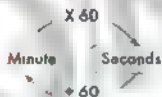
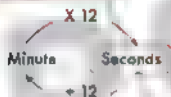
3 Find:

$$\bullet 6 \frac{2}{8} - 2 \frac{3}{4} =$$

Lesson

Story Problems with Mixed Numbers

Remember



$$1 \text{ year} = 12 \text{ months}$$

$$1 \text{ hour} = 60 \text{ minutes}$$

$$1 \text{ minute} = 60 \text{ seconds}$$

$$\frac{1}{2} \text{ year} = 6 \text{ months}$$

$$\frac{1}{2} \text{ hour} = 30 \text{ minutes}$$

$$\frac{1}{2} \text{ minute} = 30 \text{ seconds}$$

$$\frac{1}{3} \text{ year} = 4 \text{ months}$$

$$\frac{1}{3} \text{ hour} = 20 \text{ minutes}$$

$$\frac{1}{3} \text{ minute} = 20 \text{ seconds}$$

$$\frac{1}{4} \text{ year} = 3 \text{ months}$$

$$\frac{1}{4} \text{ hour} = 15 \text{ minutes}$$

$$\frac{1}{4} \text{ minute} = 15 \text{ seconds}$$

$$\frac{1}{10} \text{ hour} = 6 \text{ minutes}$$

$$\frac{1}{10} \text{ minute} = 6 \text{ seconds}$$

$$1 \text{ month} = \frac{1}{12} \text{ year}$$

$$1 \text{ minute} = \frac{1}{60} \text{ hour}$$

$$1 \text{ second} = \frac{1}{60} \text{ minute}$$

Ex.

$$\bullet 3 \frac{1}{2} \text{ hours} =$$

$$= (3 \times 60) + 30 = 210 \text{ minutes}$$

$$\bullet 80 \text{ minutes} = 60 + 20$$

$$= 1 \frac{1}{3} \text{ hours}$$

$$\bullet 3 \frac{1}{4} \text{ years} =$$

$$= (3 \times 12) + 3 = 39 \text{ months}$$

$$\bullet 16 \text{ months} = 12 + 4$$

$$= 1 \frac{1}{3} \text{ years}$$

1 Complete.

7 $7 \frac{1}{10}$ minutes = (X) + = seconds

8 $4 \frac{3}{4}$ hours = (X) + = minutes

9 $6 \frac{1}{2}$ years = (X) + = months

10 3 minutes + 45 seconds = minutes

11 An hour + 20 minutes = hours

12 4 years + 6 months = years

13 $2 \frac{1}{3}$ hours = + = minutes

14 $1 \frac{1}{2}$ years = + = months

15 150 seconds = + = minutes

16 40 months = + = years

2 A ship traveling up the Nile takes $6 \frac{1}{6}$ hours to reach its destination. On the way back, the current helps push the ship along, so it takes 30 fewer minutes for the return trip. How long is the ship's trip up and down the Nile? Give your answer both as a mixed number and in hours and minutes.

- 3 Abeer is mixing juice for a celebration. She mixes $5\frac{3}{4}$ liters of fruit juice concentrate with $1\frac{1}{2}$ liters more water than fruit juice concentrate. She needs 12 L of the mixture for the celebration. Does she have enough? Why or why not? Explain.



10

- 1 Choose the correct answer:

- a $2\frac{1}{2}$ year = months (30 or 24 or 32 or 25)
- b 90 minutes = hours ($1\frac{1}{2}$ or $1\frac{1}{3}$ or $2\frac{1}{4}$ or $2\frac{1}{2}$)
- c 180 Seconds = minutes (2 or 3 or 4 or 5)

- 2 Complete the following:

- a 2 hours + 20 minutes = hours
- b 36 months = years
- c 4 minutes + 20 seconds = minutes

- 3 Manal studied math for two hours and science for 40 minutes. How long d'd she spend studying in hours?

Unit

9

Multiplying and Dividing Fractions

Concept 9.1

Multiplying Fractions and Mixed Numbers

Lesson 1 Multiplying a Fraction or Mixed Number by a Whole Number

Learning Objectives

By the end of this lesson, the student will be able to:

- Multiply a fraction or a mixed number by a whole number

Lessons 2&3 Multiplying Fractions Using Models Multiplying Fractions by Fractions

Learning Objectives

By the end of these lessons, the student will be able to:

- Use models to represent multiplication of a fraction by a fraction
- Multiply a fraction by a fraction
- Simplify fractions

Lessons 4&5 Multiplying Fractions and Mixed Numbers Multiplying Mixed Numbers Using Improper Fractions

Learning Objectives

By the end of these lessons, the student will be able to:

- Multiply a fraction by a mixed number
- Simplify fractions and mixed numbers

Lesson 6 Story Problems Involving Multiplication of Fractions and Mixed Numbers

Learning Objectives

By the end of this lesson, the student will be able to:

- Solve story problems involving multiplication of fractions and mixed numbers
- Simplify fractions and mixed numbers



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Lesson 1

Multiplying a Fraction or Mixed Number by a Whole Number

Strategies of Multiplying a Fraction by a Whole Number

1 Using Repeated Addition:

Ex. Multiply:

$$\textcircled{a} 4 \times \frac{2}{3} = \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$$

$$\textcircled{b} 1\frac{1}{2} \times 3 = 1\frac{1}{2} + 1\frac{1}{2} + 1\frac{1}{2} = 4\frac{1}{2}$$

1 Complete the following (Write the result in its simplest form):

$$\textcircled{a} 2 \times \frac{3}{5} = \quad + \quad =$$

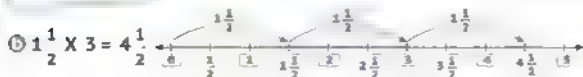
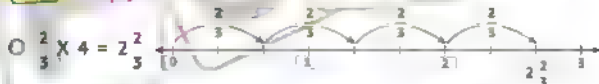
$$\textcircled{b} \frac{5}{6} \times 6 = \quad + \quad + \quad + \quad + \quad + \quad =$$

$$\textcircled{c} 2\frac{1}{4} \times 5 = \quad + \quad + \quad + \quad + \quad =$$

$$\textcircled{d} 4 \times 5\frac{1}{2} = \quad + \quad + \quad + \quad + \quad =$$

2 Drawing a Number Line:

Ex. Multiply:



2 Multiply using the number line:

a $2 \times \frac{3}{5} =$



b $\frac{1}{2} \times 4 =$



c $2 \frac{1}{4} \times 2 =$



d $3 \times 1 \frac{1}{2} =$



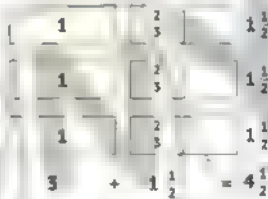
3 Drawing a Diagram:

Ex. Multiply.

a $\frac{2}{3} \times 4 = \frac{8}{3} = 2 \frac{2}{3}$



b $1 \frac{1}{2} \times 3 = 4 \frac{1}{2}$



3 Multiply using the following models.



a $3 \times \frac{4}{5} =$

b $\frac{2}{3} \times 5 =$



$$\textcircled{c} 1\frac{1}{4} \times 3 =$$

$$\textcircled{c} 2 \times 5\frac{1}{6} =$$



4 Multiplication Directly:

Multiplying a fraction by a whole number:

- Multiplying a fraction by a whole number, we multiply the numerator by the whole number, and the denominator remains the same because the denominator of the whole number is 1.

$$\text{Ex. } \textcircled{a} \frac{3}{5} \times 4 = \frac{3 \times 4}{5} = \frac{12}{5} = 2\frac{2}{5}$$

$$\textcircled{b} \frac{3}{8} \times 2 = \frac{3 \times 2}{8} = \frac{6}{8} = \frac{3}{4}$$

Multiplying a mixed number by a whole number:

- Write the mixed number as an improper fraction, then multiply this fraction by the whole number.

$$\text{Ex. } \textcircled{a} 1\frac{1}{2} \times 3 = \frac{3}{2} \times 3 = \frac{3 \times 3}{2} = \frac{9}{2} = 4\frac{1}{2}$$

$$\textcircled{b} 4\frac{2}{3} \times 6 = \frac{14}{3} \times 6 = \frac{14 \times 6}{3} = \frac{84}{3} = 28$$

The product is put in its simplest form if possible.

4 Find the product, then simplify your answer if possible:

Ⓐ $\frac{3}{4} \times 5 =$

ⓑ $\frac{2}{9} \times 3 =$

ⓒ $1\frac{5}{8} \times 4 =$

Ⓓ $1\frac{1}{3} \times 5 =$

5 Ezz walks around of the garden 3 days per week

The perimeter of the garden is $2\frac{1}{5}$ kilometers. What is the total distance that Ezz walks each week? Use the given strategies to create four different representations of the scenario.

Ⓐ Use Repeated Addition:

ⓑ Draw a Number Line.



ⓒ Draw a Diagram:



Ⓓ Use Improper Fractions:

Ⓔ Convert to meters to solve, then write the answer in kilometers

$2\frac{1}{5}$ km = _____ m.

\times _____ = _____ m = _____ km.

Factors and Products

The multiplication $4 \times \frac{6}{10} = \frac{24}{10}$

it can be written in several ways, based on the factors of 4

$$24 = 1 \times 24 \rightarrow 4 \times \frac{6}{10} = 1 \times \frac{24}{10} \quad \text{or} \quad 4 \times \frac{6}{10} = 24 \times \frac{1}{10}$$

$$24 = 2 \times 12 \rightarrow 4 \times \frac{6}{10} = 2 \times \frac{12}{10} \quad \text{or} \quad 4 \times \frac{6}{10} = 12 \times \frac{2}{10}$$

$$24 = 3 \times 8 \rightarrow 4 \times \frac{6}{10} = 3 \times \frac{8}{10} \quad \text{or} \quad 4 \times \frac{6}{10} = 8 \times \frac{3}{10}$$

$$24 = 4 \times 6 \rightarrow 4 \times \frac{6}{10} = 4 \times \frac{6}{10} \quad \text{or} \quad 4 \times \frac{6}{10} = 6 \times \frac{4}{10}$$

6 Write two different multiplication expressions that have the same product:

a $6 \times \frac{3}{7} =$ \times $=$ \times

b $4 \times \frac{5}{6} =$ \times $=$ \times

c $3 \times \frac{4}{5} =$ \times $=$ \times

Fraction Patterns

7 Complete the input-output tables, as in the example. Simplify your answers, if possible.

1 Rule ($\times \frac{4}{5}$)

	Input	Output
Ex.	2	$2 \times \frac{4}{5} = \frac{8}{5} = 1 \frac{3}{5}$
a	3	
b	4	
c	5	

☑ Rule ($\times 3 \frac{5}{8}$)

	Input		Output
Ex.	2	$2 \times 3 \frac{5}{8} = 2 \times \frac{29}{4} = \frac{58}{4} = \frac{29}{2} = 14 \frac{1}{2}$	
A	4		
B	6		
C	8		

10

1 Find the product in the simplest form:

a $3 \times \frac{5}{7} =$ + + =

b $5 \times 3 \frac{2}{3} =$

c $1 \frac{1}{3} \times 4 =$ × = =

d $\frac{5}{3} \times 6 =$

e $\frac{1}{2} \times 5 =$

2 Malek runs $1 \frac{3}{5}$ km everyday, calculate the distance he runs in a week in km.

3 Mazen bought 10 cans of soda. If the price of each can is $7 \frac{2}{5}$ LE, how much money did Mazen pay?

Lessons 2&3

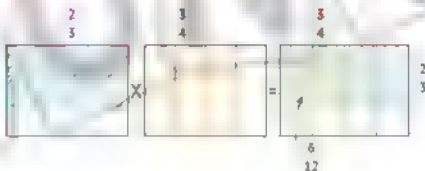
Multiplying Fractions Using Models Multiplying Fractions by Fractions

Modeling Multiplication

Ex. Use an area model to multiply $\frac{2}{3} \times \frac{3}{4}$

$$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$$

$$= \frac{1}{2}$$



1 Use an area model to multiply:

Ⓐ $\frac{3}{4} \times \frac{1}{3} =$

Ⓑ $\frac{1}{2} \times \frac{1}{5} =$

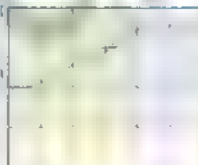
Ⓒ $\frac{3}{6} \times \frac{5}{6} =$



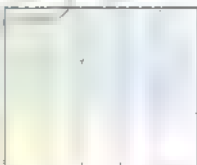
2 Write the multiplication problem that is represented by each of the following models, then find the product. Simplify your answers, if possible:



Ⓐ $\times =$



Ⓑ $\times =$



Ⓒ $\times =$

Multiplying a Fraction by a Fraction

- There are **two** ways to find the product:

1 Multiplying, then simplifying:

- Multiply first, and then put the result in its simplest form

Ex. Find the product. Simplify your answers

$$\text{a) } \frac{3}{10} \times \frac{8}{9} = \frac{24}{90} = \frac{4}{15} \leftarrow \text{Simplest form}$$

$10 \times 9 = 90$ $\div 6$

$$\text{b) } \frac{5}{7} \times \frac{7}{10} = \frac{35}{70} = \frac{1}{2}$$

$$\text{c) } \frac{3}{8} \times \frac{2}{5} = \frac{6}{40} = \frac{3}{20}$$

2 Simplifying, then multiplying

- Divide by the common factors of the opposite pairs of the numerator and the denominator, then multiply.

Ex. Find the product. Simplify your answers

$$\text{a) } \frac{3}{10} \times \frac{8}{9} = \frac{4}{15}$$

$3 \div 3 = 1$ $8 \div 2 = 4$ $1 \times 4 = 4$
 $10 \div 2 = 5$ $9 \div 3 = 3$ $5 \times 3 = 15$

$$\text{b) } \frac{3}{8} \times \frac{2}{5} = \frac{3}{20}$$

$$\text{c) } \frac{7}{7} \times \frac{7}{10} = \frac{1}{2}$$

3 Find the product. Simplify your answers, if possible.

Ⓐ $\frac{3}{8} \times \frac{1}{6} =$

Ⓑ $\frac{5}{8} \times \frac{4}{15} =$

Ⓒ $\frac{3}{8} \times \frac{2}{9} =$

Ⓓ $\frac{5}{12} \times \frac{3}{5} =$

Ⓔ $\frac{4}{5} \times \frac{2}{5} =$

Ⓕ $\frac{8}{9} \times \frac{1}{2} =$



1 Find the product in the simplest form:

Ⓐ $\frac{4}{9} \times \frac{3}{16} =$

Ⓑ $\frac{4}{7} \times \frac{5}{2} =$

Ⓒ $\frac{2}{14} \times \frac{7}{8} =$

Ⓓ $\frac{5}{6} \times \frac{1}{3} =$

Ⓔ $\frac{5}{8} \times \frac{13}{13} =$

2 Adam wants to buy three quarters of a pizza. If the price of each quarter equals $\frac{16}{18}$ LE, how much money will he pay in all?

Lessons 4&5

Multiplying Fractions and Mixed Numbers Multiplying Mixed Numbers Using Improper Fractions

- There are two ways to multiply mixed numbers using improper fractions

1 Multiplying, then simplifying

- Write the mixed numbers as improper fractions.
- Multiply improper fractions
- Put the result in its simplest form.

2 Simplifying, then multiplying

- Write the mixed numbers as improper fractions.
- Simplify the improper fractions.
- Multiply improper fractions.

Ex: $3\frac{2}{3} \times 3\frac{3}{4}$

1 Multiplying, then multiplying

$$3\frac{1}{3} \times \frac{3}{3} = \frac{10}{3} \times \frac{3}{1} = \frac{30}{3} = 10$$

2 Simplifying, then multiplying

$$3\frac{1}{3} \times \frac{3}{3} = \frac{10}{3} \times \frac{1}{1} = \frac{10}{3} = 3\frac{1}{3}$$

Ex: $1\frac{1}{7} \times 1\frac{1}{6}$

1 Multiplying, then multiplying

$$1\frac{1}{7} \times 1\frac{1}{6} = \frac{8}{7} \times \frac{7}{6} = \frac{56}{42} = 1\frac{14}{42} = 1\frac{1}{3}$$

2 Simplifying, then multiplying

$$1\frac{1}{7} \times 1\frac{1}{6} = \frac{8}{7} \times \frac{7}{6} = \frac{4}{3} = 1\frac{1}{3}$$

Rewrite the mixed numbers as **improper fractions**. Then, **simplify** before you multiply, and **simplify your answers**.

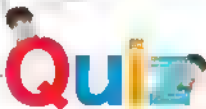
a $3\frac{3}{8} \times 1\frac{2}{6} =$

b $3\frac{3}{4} \times \frac{2}{5} =$

c $4\frac{1}{2} \times 2\frac{2}{3} =$

d $1\frac{1}{3} \times 1\frac{3}{8} =$

e $4\frac{2}{7} \times 2\frac{1}{3} =$



10

1 Find the product in the simplest form:

a $2\frac{1}{7} \times 1\frac{4}{10} =$

b $5\frac{1}{2} \times \frac{3}{44} =$

c $\frac{3}{8} \times 1\frac{1}{3} =$

d $5\frac{1}{4} \times 2\frac{2}{3} =$

e $3\frac{1}{5} \times 1\frac{7}{8} =$

2 Murad bought $1\frac{1}{4}$ kg of strawberries. If the price of each kg is $7\frac{1}{5}$ LE, how much money did Murad pay?

Lesson

6

Story Problems Involving Multiplication of Fractions and Mixed Numbers

When solving word problems

We use addition if:

- we understand from reading the problem that there are two or more quantities of the same kind and we need addition to get the sum.

We use multiplication if:

- we understand from reading the problem that there is repetition or multiplication.

- 1 Aya purchased a bag of tomatoes from the market that has a mass of $2\frac{1}{3}$ kilograms. Her brother, Ameen, purchased a bag of potatoes that had a mass $1\frac{1}{2}$ times more than Aya's bag of tomatoes. What is the mass of Ameen's bag of potatoes?
- 2 Moustafa is harvesting sugar cane. He can harvest $3\frac{3}{4}$ kilograms of sugarcane in 1 hour. If he plans to work for $2\frac{1}{2}$ hours, how much sugarcane will he harvest?
- 3 Farida is reading a chapter in a book. She can usually read 20 pages in 1 hour. If she plans to read for 1 hour and 15 minutes, how many pages will she read?

- 4 Seif bought 4 bags of soil for his garden. Each bag has a mass of $3\frac{1}{3}$ kilograms. If he only used $3\frac{1}{2}$ bags of soil, how many kilograms are left?

- 5 Write a multiplication story problem using $12\frac{1}{2}$ and $3\frac{2}{3}$.

Quit

10

- 1 Rocky finished a 200-meter race in $\frac{5}{12}$ of a minute. The winner of the race used $\frac{2\frac{1}{2}}{25}$ of Rocky's time to finish the race. How much time did the winner use to finish the race?
- 2 At a school, there are 864 students. $\frac{3}{8}$ of the students are boys.
- a How many boys are there in the school?
 - b $\frac{2}{9}$ of the boys joined the soccer team.
How many boys are there in the soccer team?

Unit

9

Multiplying and Dividing Fractions

I ♥ Math

Concept 9.2

Dividing Whole Numbers and Unit Fractions

Lesson

7

Convert Improper Fraction to Mixed Number

Learning Objectives

By the end of this lesson, the student will be able to:

- Explain how fractions represent division of whole numbers

Lessons

8&9

Dividing Unit Fractions by Whole Numbers Dividing Whole Numbers by Unit Fractions

Learning Objectives

By the end of these lessons, the student will be able to:

- Use models to divide unit fractions by whole numbers
- Explain the relationship between division and multiplication of fractions
- Use models to divide whole numbers by unit fractions
- Apply the relationship between division and multiplication of fractions to solve problems

Lesson

10

Story Problems Involving Division of Whole Numbers and Unit Fractions

Learning Objectives

By the end of this lesson, the student will be able to:

- Solve story problems involving division of whole numbers and unit fractions
- Simplify fractions and mixed numbers



Lesson 7

Convert Improper Fraction to Mixed Number

When using fractions to represent division, it becomes:

Dividend \rightarrow Numerator

Divisor \rightarrow Denominator

Ex. Ahmed wants to divide 3 bars of chocolate among 4 of his friends.
How much is the share of each of them?

The share of each friend = $3 \div 4 = \frac{3}{4}$ piece



Note: In the corresponding model

When dividing each model into 4 equal parts, each friend gets $\frac{3}{4}$ (3 parts).

Ex. A fruit merchant divides 7 kilograms of oranges into 5 baskets.
How many oranges are there in each basket?

Quantity of oranges in each basket =

$$7 \div 5 = \frac{7}{5} = 1 \frac{2}{5}$$

Quotient

Divisor

Remainder

$$\begin{array}{r} 1 \\ 5 \overline{) 7} \\ \underline{- 5} \\ 2 \end{array}$$



Note: When dividing ($7 \div 5$),

we find that, the quotient is 2 and the remainder is 1, so the quotient is written in the form of a mixed number



- 1 Using the following models, write the quotient as a fraction or a mixed number. Simplify your answers, if possible:

Ⓐ $2 \div 3 =$

Ⓑ $7 \div 3 =$

Ⓒ $3 \div 5 =$

Ⓓ $4 \div 3 =$

- 2 Complete the following table:

Expression

Ex.

$9 \div 4$

Ⓐ $8 \div 5$

Ⓑ $4 \div 3$

Ⓒ $6 \div 3$

Standard
Division
Algorithm

$$\begin{array}{r} 2 \\ 4 \overline{) 9} \\ - 8 \\ \hline 1 \end{array}$$

$$5 \overline{) 8}$$

Quotient

$9 \div 4 = 2 \frac{1}{4}$

$8 \div 5 =$

3 Write the quotient as a fraction or a mixed number. Simplify your answers, if possible:

a $3 \div 8 =$

b $5 \div 10 =$

c $18 \div 8 =$

d $6 \div 9 =$

e $25 \div 15 =$

f $16 \div 12 =$



10

1 Use the following model to complete:

$5 \div 8 =$

2 Choose the correct answer:

a $\frac{2}{7} =$

b $13 \div 4 =$

c $15 \div 7 =$

$(2 \div 7 \text{ or } 2 \times 7 \text{ or } 2 + 7 \text{ or } 2 - 7)$

R1

$(2 \text{ or } 3 \text{ or } 4 \text{ or } 5)$

$(7 \frac{1}{2} \text{ or } 2 \frac{1}{7} \text{ or } 1 \frac{2}{7} \text{ or } 1 \frac{7}{2})$

3 Complete the following

a $5 \div 7 =$

b $4 \div 8 =$

c $21 \div 28 =$

d $32 \div 24 =$

Lessons

8&9

Dividing Unit Fractions by Whole Numbers Dividing Whole Numbers by Unit Fractions

Remember

- Unit fractions are fractions with a **numerator** of 1.
- All unit fractions are less than $\frac{1}{2}$.
- When multiplying a **unit fraction** by the number in its **denominator**, the result is 1.

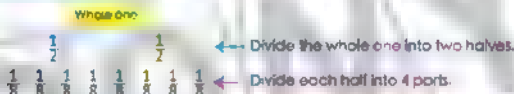
Ex. $\frac{1}{4} \times 4 = 1$ $\frac{1}{5} \times 5 = 1$

- The **larger** the number in the **denominator** of a unit fraction, the **smaller** the fraction.

1 Dividing Unit Fractions by Whole Numbers:

Ex. Divide. $\frac{1}{2} \div 4$

First: Using models



- 8 parts, each part is an **eighth**.

$$\frac{1}{2} \div 4 = \frac{1}{8}$$

The quotient is one part

Second: By converting division into multiplication

- Dividing $\frac{1}{2}$ by 4, means finding $\frac{1}{4}$ from $\frac{1}{2}$ and it is the value of $\frac{1}{2} \times \frac{1}{4}$

So, $\frac{1}{2} \div 4 = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$



1 Find the quotient using the following models:

Ⓐ $\frac{1}{3} \div 5 =$

Ⓑ $\frac{1}{2} \div 7 =$

2 Divide:

Ⓐ $\frac{1}{2} \div 3 =$ $\times =$ Ⓑ $\frac{1}{5} \div 2 =$ $\times =$

Ⓒ $\frac{1}{4} \div 6 =$ $\times =$ Ⓓ $\frac{1}{3} \div 3 =$ $\times =$

2 Dividing Whole Numbers by Unit Fractions:

Ex. Divide Ⓐ $4 \div \frac{1}{2}$

First: Using models



• 8 equal halves.

$(4 \div \frac{1}{2} = 8)$ The quotient is the number of parts.

Second: By converting division into multiplication

• Dividing 4 by $\frac{1}{2}$ means finding the number halves in 4. We know that every 1 consists of two halves, so the number of halves is 2×4 .

So, $4 \div \frac{1}{2} = 4 \times 2 = 8$

Fractions, Decimals, and Proportional Relationships

- In the previous two examples, we find that, we have converted the division process into multiplication. The dividend remains unchanged, but the divisor is inverted (multiplicative inverse).

$$4 \rightarrow \frac{1}{4} \quad , \quad \frac{1}{2} \rightarrow 2$$

3 Find the quotient using the following models:

a $3 \div \frac{1}{4} =$

Whole one

Whole one

Whole one

b $4 \div \frac{1}{3} =$

Whole one

Whole one

Whole one

Whole one

4 Divide:

a $5 \div \frac{1}{3} =$ \times $=$

b $4 \div \frac{1}{5} =$ \times $=$

c $6 \div \frac{1}{3} =$ \times $=$

d $3 \div \frac{1}{6} =$ \times $=$

5 Complete, as in the examples:

Ex. $\frac{1}{2} \times 2 = 1$, $\frac{1}{2} \times 4 = 2$, $\frac{1}{2} \times 6 = 3$

a $\frac{1}{3} \times \quad = 1$, $\frac{1}{3} \times \quad = 2$, $\frac{1}{3} \times \quad = 3$

b $\frac{1}{4} \times \quad = 1$, $\frac{1}{4} \times \quad = 2$, $\frac{1}{4} \times \quad = 3$

6 Complete.

$$\textcircled{a} \frac{1}{3} \div \quad = \frac{1}{12}$$

$$\textcircled{b} \frac{1}{3} \times \quad = \frac{1}{12}$$

$$\textcircled{c} \frac{1}{4} \div \quad = \frac{1}{20}$$

$$\textcircled{d} \frac{1}{4} \times \quad = \frac{1}{20}$$

$$\textcircled{e} 5 \div \quad = 15$$

$$\textcircled{f} 5 \times \quad = 15$$



10

1 Choose the correct answer

$$\textcircled{a} \frac{1}{5} \div 3 = \quad \quad \quad \{ 5 \text{ or } \frac{1}{5} \text{ or } \frac{1}{15} \text{ or } 15 \}$$

$$\textcircled{b} 8 \div \frac{1}{5} = \quad \quad \quad \{ 8 \div 5 \text{ or } 5 \div 8 \text{ or } 8 \times 5 \text{ or } 8 + 5 \}$$

$$\textcircled{c} \frac{1}{2} \times \quad = 8 \quad \quad \quad \{ 4 \text{ or } 8 \text{ or } 16 \text{ or } 2 \}$$

$$\textcircled{d} \frac{1}{5} \times \quad = \frac{1}{15} \quad \quad \quad \{ 3 \text{ or } \frac{1}{3} \text{ or } \frac{1}{5} \text{ or } \frac{1}{15} \}$$

2 Use the following models to complete:

Whole is

Whole is

Whole is

Whole is

Whole is

a

 \div
 $=$

b

 \div
 $=$

3 Complete the following:

$$\textcircled{a} \frac{1}{6} \times \quad = 3$$

$$\textcircled{b} \frac{1}{5} \times \quad = 2$$

$$\textcircled{c} \frac{1}{2} \times \quad = 3$$

$$\textcircled{d} \frac{1}{3} \times \quad = 6$$

Lesson 10

Story Problems Involving Division of Whole Numbers and Unit Fractions



Note: The story problems must be read and understood to determine the operation to be performed
Addition • Subtraction • Multiplication • Division

1 Choose the operation for each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described. (Then answer)

- a** There are 4 kg of chickpeas, and the worker divides the chickpeas into $\frac{1}{4}$ kilogram packages. How many packages should be made?
- b** There are 4 bags of chickpeas, and each bag weighs $\frac{1}{4}$ kilogram. What is the total mass of chickpeas?
- c** There are 10 packages of chickpeas, the first one is $2\frac{3}{4}$ kg and the second one is $1\frac{1}{2}$ kg. What is the total mass of chickpeas?
- d** There are $7\frac{1}{4}$ kg of chickpeas, the worker packed part of this quantity in packages and $3\frac{1}{4}$ kg remained. What quantity did the worker pack?

- 2 A turtle crawls $\frac{1}{2}$ kilometer per hour. How many hours does it take the turtle to cover a distance of 8 km?
- 3 Abdullah wraps 3 identical gifts, and uses $\frac{1}{2}$ of a roll of paper to wrap the gifts. If each gift uses the same amount of paper, how much paper does he use for each gift?

Quiz

10

- 1 Choose the operation for each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described:

- a Omar distributed $\frac{1}{2}$ kg of meat among 4 bags. What is the share of each bag? ()
- b Ahmed bought 1 $\frac{1}{2}$ kg of bananas and 2 $\frac{1}{4}$ kg of apples. What is the total mass of what he bought? ()
- c Ali has 3 $\frac{1}{2}$ bars of chocolate, he ate 1 $\frac{3}{4}$ bars of them. What is the remainder? ()

2 Answer:

- a The price of one kg of tomato is 10 pounds. What is the price of $\frac{1}{2}$ kg?
- b A painter paint $\frac{1}{3}$ of a wall in one hour. How long will it take to paint 4 walls?

Theme

4



$$\frac{12}{8}$$



$$\frac{14}{5}$$



Theme Units

Unit 10 Two-Dimensional Figures and Coordinate Planes

Concept 10.1: Investigating Attributes of Shapes

Concept 10.2: Coordinate Planes

Unit 11 Volume

Concept 11.1: Understanding Volume and Capacity

Concept 11.2: Measuring Volume

Unit 12 Pie Charts and Applying Mathematical Learning

Concept 12.1: Understanding Pie Charts

Unit

10

Two-Dimensional Figures and Coordinate Planes



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Concept 10.1 Investigating Attributes of Shapes

Lesson 1 Classifying of Geometric Shapes

Learning Objectives

By the end of this lesson, the student will be able to:

- Classify two-dimensional figures into categories based on their attributes
- Classify two-dimensional figures into categories and subcategories based on their attributes
- Explain how two figures can belong to more than one subcategory

Lesson 2 Tricky Triangles

Learning Objectives

By the end of this lesson, the student will be able to:

- Measure the sides of triangles
- Categorize triangles based on their properties

Lessons 3&4 Calculating Area with Fractional Dimensions Applying the Area Formula

Learning Objectives

By the end of these lessons, the student will be able to:

- Use tiling to find the area of rectangles with whole number and fractional dimensions
- Draw models to find the area of rectangles with whole number and fractional dimensions
- Multiply to find the area of rectangles with whole number and fractional dimensions

Classifying of Geometric Shapes

Review of Geometrical Vocabulary and Terms

Ray



Line segment



Straight line



Perpendicular lines



Intersecting lines



Parallel lines



Obtuse angle



Acute angle



Right angle



Reflex angle



Straight angle



Polygon



Parallelogram



Square



Trapezium



Rectangle



Rhombus

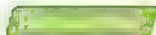


Two congruent shapes



Shape with a line of symmetry





Polygons They are closed two-dimensional shapes, consisting of at least three non-curved non-intersecting sides.

A polygon is named according to the number of its sides and vertices.

Quadrilateral (4-sides polygons)

Parallelogram

Sides: 2 pairs of parallel sides that are opposite to each other

Each two opposite sides are congruent

Angles: 2 acute angles and 2 obtuse angles



its angles become right,
it becomes



its sides become congruent,
it becomes



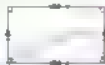
Rectangle

Sides: 2 pairs of parallel sides.

Each two opposite sides are congruent

Angles:

4 right angles



Rhombus

Sides:

2 pairs of parallel sides,

4 congruent sides

Angles: 2 acute angles

2 obtuse angles



its sides become
congruent,
it becomes



Square

Sides: 2 pairs of parallel sides,
4 congruent sides

Angles: 4 right angles



its angles
become right,
it becomes

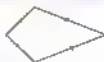
Trapezium

Exactly 1 pair of parallel sides



Kite

2 pairs of adjacent sides that are congruent



1 Complete the following sentences:

Ⓐ Quadrilaterals that have two pairs of parallel sides are:

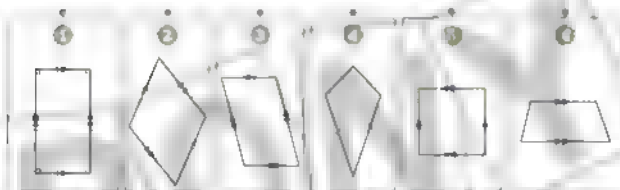
Ⓑ Quadrilaterals that have four sides of equal length are:

Ⓒ Quadrilaterals that have four right angles are:

Ⓓ A trapezium has exactly _____ pair of parallel sides that are _____ in length.

2 Match each quadrilateral with its name:

Ⓐ Parallelogram Ⓑ Rectangle Ⓒ Rhombus Ⓓ Square Ⓔ Trapezium Ⓕ Kite



3 Study the following figure, then write the type of each angle:

Ⓐ Angle (A) is

Ⓑ Angle (B) is

Ⓒ Angle (C) is

Ⓓ Angle (D) is

Ⓔ Angle (E) is





10

1 Complete the following:

- a The polygon which has six sides is called _____
- b The quadrilateral, in which all sides are equal in length and all angles are right, is called _____
- c The _____ has only one pair of parallel sides
- d The pentagon has _____ sides

2 Choose the correct answer:

- a The polygon which has four sides is called _____
(hexagon or pentagon or quadrilateral or triangle)
- b Mona is making a design of a quadrilateral with four equal sides, she is making a _____
(trapezoid or rhombus or rectangle or parallelogram)
- c The _____ is a parallelogram with 4 right angles.
(trapezoid or rhombus or rectangle or parallelogram)

3 Match each figure to its name:



Rectangle

Trapezium

Triangle

Rhombus

Square

Parallelogram

1

2

3

4

5

6

2

Tricky Triangles

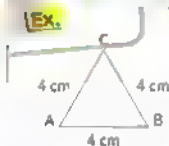
Triangles are classified based on their properties, as follows:

Classifying triangles by the length of their sides

1 Equilateral Triangle

3 equal sides

[Ex.]

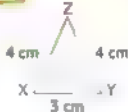


$$AB = BC = AC = 4 \text{ cm}$$

2 Isosceles Triangle

2 equal sides

[Ex.]

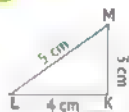


$$\begin{aligned} XZ &= YZ = 4 \text{ cm} \\ XY &= 3 \text{ cm} \end{aligned}$$

3 Scalene Triangle

No equal sides

[Ex.]



$$\begin{aligned} KL &= 4 \text{ cm}, LM = 5 \text{ cm}, \\ KM &= 3 \text{ cm} \end{aligned}$$

Classifying triangles by the measure of their angles

1 Acute Triangle

3 acute angles

[Ex.]



- ∠ A is an acute angle.
- ∠ B is an acute angle.
- ∠ C is an acute angle.

2 Right Triangle

1 right angle
2 acute angles

[Ex.]

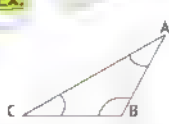


- ∠ A is an acute angle.
- ∠ B is a right angle.
- ∠ C is an acute angle.

3 Obtuse Triangle

1 obtuse angle
2 acute angles

[Ex.]



- ∠ A is an acute angle.
- ∠ B is an obtuse angle.
- ∠ C is an acute angle.



Notes:

- Any triangle has at least two acute angles.
- An equilateral triangle is an acute triangle, not vice versa.

- 1 Measure the sides of each of the following triangles and determine the types of their angles, then classify them according to the lengths of their sides and the types of their angles. Use a ruler to measure the lengths to the nearest $\frac{1}{2}$ cm or the nearest whole number.

- 1 The lengths of the sides.

AB = _____ cm, AC = _____ cm, BC = _____ cm

- 2 The type of the triangle according to the lengths of its sides is _____

- 3 The types of its angles: $\angle A$ is _____
 $\angle B$ is _____, and $\angle C$ is _____

- 4 The type of the triangle according to the types of its angles is _____

- 2 The lengths of the sides:

XY = _____ cm, YZ = _____ cm, XZ = _____ cm

- 2 The type of the triangle according to the lengths of its sides is _____

- 3 The types of its angles: $\angle Y$ is _____
 $\angle X$ is _____, and $\angle Z$ is _____

- 4 The types of the triangle according to the types of its angles is _____

Applications of Geometry and Measurement

- ② 1 The lengths of the sides:

KL = cm, LM = cm,

KM = cm

- 2 The type of the triangle according to the lengths of its sides is

- 3 The types of its angles $\angle K$ is

$\angle L$ is , and $\angle M$ is

- 4 The type of the triangle according to the types of its angles is

- ③ 1 The lengths of the sides:

AB = cm, AC = cm, BC = cm

- 2 The type of the triangle according to the lengths of its sides is

- 3 The types of its angles $\angle B$ is

$\angle A$ is , and $\angle C$ is

- 4 The type of the triangle according to the types of its angles is



Notes:

- An equilateral triangle is always an acute triangle. (All its angles are equal and measure 60° each.)
- An isosceles triangle can be an acute-angled, obtuse-angled, or right-angled triangle
- A scalene triangle can be an acute-angled, obtuse-angled, or right-angled triangle.

- 2** Measure and label each triangle. Then, select the best name for each triangle based on its properties. Some triangles may be classified in more than one way.

1 Which two types of triangles are shown?

- ☐ 1 A scalene triangle
- ☐ 2 A right triangle
- ☐ 3 An isosceles triangle
- ☐ 4 An acute triangle
- ☐ 5 An equilateral triangle
- ☐ 6 An obtuse triangle

2 Which two types of triangles are shown?

- ☐ 1 A scalene triangle
- ☐ 2 A right triangle
- ☐ 3 An isosceles triangle
- ☐ 4 An acute triangle
- ☐ 5 An equilateral triangle
- ☐ 6 An obtuse triangle

3 Which two types of triangles are shown?

- ☐ 1 A scalene triangle
- ☐ 2 A right triangle
- ☐ 3 An isosceles triangle
- ☐ 4 An acute triangle
- ☐ 5 An equilateral triangle
- ☐ 6 An obtuse triangle



Quiz

10

1 Classify each triangle as equilateral, isosceles, or scalene triangle:

a



b



c



2 Classify each triangle as acute, right, or obtuse triangle:

a



b



c



3 Choose the correct answer:

- a The triangle of side lengths of 5 cm, 6 cm, and 7 cm is called _____ triangle
(an equilateral or an isosceles or a scalene or a right)
- b The triangle whose side lengths of _____ is an equilateral triangle
(7 cm, 5 cm, and 7 cm or 5 cm, 7 cm, and 5 cm or 4 cm, 4 cm, and 4 cm or 8 cm, 3 cm, and 6 cm)
- c If $AB = BC = AC$, then the triangle ABC is a/an _____ triangle
(equilateral or isosceles or scalene or right)
- d The right triangle has _____ acute angle(s) _____ (1 or 2 or 3 or 0)

4 Which two types of triangles are shown:

- a An equilateral triangle
- b An isosceles triangle
- c A scalene triangle
- d A right triangle
- e An acute triangle
- f An obtuse triangle

3&4

Calculating Area with Fractional Dimensions Applying the Area Formula

Remember

Rectangle It is a quadrilateral with:

- Two pairs of parallel sides.
- Each two opposite sides are equal in length
- Four right angles.

Using Tiling to Find the Areas of Rectangles

Ex. Draw a rectangle with a length of 8 units and a width of 4 units, then find its area

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32

The area of the rectangle = 32 square units.

- 1 Draw a rectangle with a length of 7 units and a width of 5 units, then find its area

• The area of the rectangle

= square units.

- 2 Draw a rectangle whose area is 24 square units, then complete.

• The length of the rectangle

= units.

• The width of the rectangle

= units.

Calculating the Area for Dimensions that Contain Fractions

1- By tiling with fractional dimensions.

- Area of rectangle = number of squares that formed the rectangle

2 By applying the area formula

- Area of rectangle = length \times width

Ex. Draw a rectangle that has a length of $3\frac{1}{2}$ units and a width of 3 units, then find its area.

1- By tiling with fractional dimensions

- The area of the rectangle = $10\frac{1}{2}$ square units.

2 By applying the area formula

- Area of rectangle = Length \times Width

$$= 3\frac{1}{2} \times 3 = \frac{7}{2} \times 3 = \frac{21}{2} = 10\frac{1}{2} \text{ square units.}$$

Ex. Draw a rectangle that has a length of $3\frac{1}{2}$ units and a width of $2\frac{1}{2}$ units, then find its area.

1- By tiling with fractional dimensions.

- The area of the rectangle = $8\frac{3}{4}$ square units

2 By applying the area formula

- Area of rectangle = Length \times Width

$$= 3\frac{1}{2} \times 2\frac{1}{2} = \frac{7}{2} \times \frac{5}{2} = \frac{35}{4} = 8\frac{3}{4} \text{ square units.}$$

- 3** Draw a rectangle that has a length of $4\frac{1}{3}$ units and a width of 3 units, then find its area.

1- By tiling with fractional dimensions

• The area of the rectangle = square units.

2- By applying the area formula

• Area of rectangle = Length X Width =

= square units.

- 4** Draw a rectangle that has a length of $4\frac{1}{2}$ units and a width of $2\frac{1}{3}$ units, then find its area.

1- By tiling with fractional dimensions.

• The area of the rectangle = square units.

2- By applying the area formula.

• Area of rectangle = Length X Width =

= square units.

Ex. A rectangle has a length of $5\frac{1}{4}$ units, and a width of $3\frac{1}{3}$ units. Find its area.

$$A = L \times W = 5\frac{1}{4} \times 3\frac{1}{3} = \frac{21}{4} \times \frac{10}{3} = \frac{35}{2} = 17\frac{1}{2} \text{ cm.}$$

- 5** A rectangle has a length of $6\frac{3}{4}$ units, and a width of $\frac{4}{9}$ units. Find its area.



Quiz

10

1 Draw:

- a rectangle with length of $3\frac{1}{2}$ units and width of $2\frac{1}{4}$ units, then find its area

The area of rectangle = square units.

2 Draw:

- a rectangle whose area is 18 square units

The length of rectangle = units

The width of rectangle = units

3 Find the area of the following rectangle:

$$3\frac{1}{4} \text{ m}$$

$$1\frac{1}{3} \text{ m}$$

Unit

10

Two-Dimensional Figures and Coordinate Planes

Concept 10.2 Coordinate Planes

Lessons

5-7

Exploring the Coordinate Plane
Plotting Points on a Coordinate Plane
Coordinate Designs

Learning Objectives

By the end of these lessons, the student will be able to:

- Describe a coordinate plane
- Define elements of a coordinate plane
- Identify points on a coordinate plane
- Name points on a coordinate plane
- Plot ordered pairs on a coordinate plane to create a picture

Lesson

8

Representing Points and Creating Patterns

Learning Objectives

By the end of this lesson, the student will be able to:

- Identify and extend numerical patterns
- Graph points from a numerical pattern

Lesson

9

Graphing Real-World Data

Learning Objectives

By the end of this lesson, the student will be able to:

- Interpret data on coordinate planes
- Solve real-world problems involving data on coordinate planes



5-7

Exploring the Coordinate Plane

Plotting Points on a Coordinate Plane

Coordinate Designs

Remember

Number line It is a straight line on which numbers are drawn as points separated by a regular distance, and it can be drawn horizontally or vertically.

Ex.

Notice each of the following two number lines



The value of A is 1, the value of B is $2\frac{1}{2}$

The value of C is 3, the value of D is $3\frac{1}{2}$

To determine the distance between two points on a number line, we calculate the difference between the two points

The distance between A and B is $2\frac{1}{2} - 1 = 1\frac{1}{2}$ units.

The distance between D and A is $3\frac{1}{2} - 1 = 2\frac{1}{2}$ units.



1 Use the following number line to answer the questions:



Ⓐ The value of A is

Ⓐ The value of B is

Ⓑ The value of C is

Ⓑ The value of D is

Ⓒ The distance between A and B is

units.

Ⓓ The distance between D and A is

units.

2 Use the following number line to answer the questions.

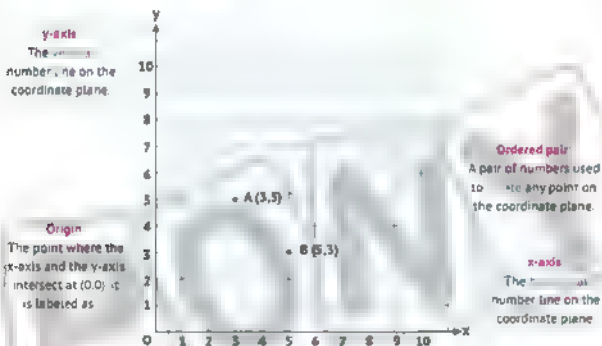
- ☐ The value of A is _____ units.
☐ The value of B is _____ units.
☐ The value of C is _____ units.
☐ The value of D is _____ units.
☐ The distance between A and B is _____ units.
☐ The distance between C and A is _____ units.
☐ The distance between D and B is _____ units.



Coordinate Plane (Coordinate Grid)

It is a two-dimensional plane formed by the intersection of two number lines:

- The horizontal number line is known as the **x-axis**, and the vertical number line is known as the **y-axis**.



- Ordered pairs are written from left to right (x, y).

x-coordinate
It is the first number in an ordered pair, which tells how far to move right or left from the origin. It is labeled as x.

$A(3, 5)$
 $B(5, 3)$

y-coordinate
It is the second number in an ordered pair which tells how far to move up or down from the origin. It is labeled as y.

3 Using the following **coordinate plane**, write the **ordered pair** that represents each of the following points

a A (,)

b B (,)

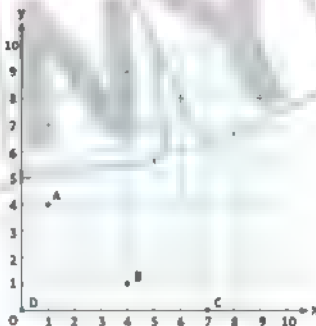
c C (,)

d D (,)

e Locate the following points

E (2, 3) F (8, 1)

G (0, 9) H (4, 0)



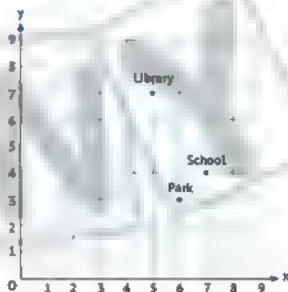
4 Complete using the **coordinate grid**.

a The ordered pair that represents the **library** is (,).

b The ordered pair that represents the **park** is (,).

c The ordered pair that represents the **school** is (,).

d To move from the **school** to the **library**, travel to the **left** of the x-coordinate units. Then, travel **up** from the y-coordinate units.



5 Locate the following points, then complete:

A (1, 5), B (2, 2)

C (6, 2), D (5, 5)

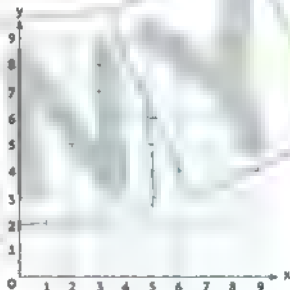
- Ⓐ Connect the above points in the following order:

A → B → C → D → A

- Ⓑ The name of the resulting shape is

Ⓒ AB = _____, BC = _____

Ⓓ AB, _____ are parallel and BC, _____ are parallel



6 On the following coordinate plane, plot the points D and E to make a figure that is **symmetrical** along the **vertical red line** drawn on the coordinate plane.

Point D should follow point C:

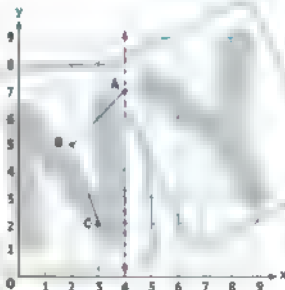
Connect the points

C → D → E → A

to close the shape. Then, list

the coordinates of

D (_____, _____) and E (_____, _____).



- All points on the x-axis have a **y-coordinate** (0). **Ex.** (8, 0) (3, 0) (5, 0)
- All points on the y-axis have a **x-coordinate** (0). **Ex.** (0, 8) (0, 3) (0, 5)

Quiz

10

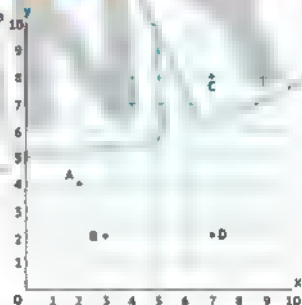
1 Complete using the opposite figure

a Point A: (,)

b Point B: (,)

c Point C: (,)

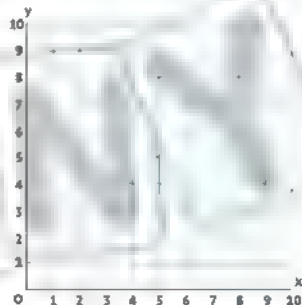
d Point D: (,)

e $BD =$ unitsf $CD =$ units

2 Plot the points on the following coordinate grid:

A(3,2) , B (3,5), C (6,5), D (6,2)

Connect the points in order. The polygon you created is



3 Choose the correct answer:

a The point lies on x-axis [(2,3) or (0,7) or (5,5) or (7,0)]

b The point lies on y-axis [(5,3) or (0,2) or (1,1) or (6,0)]

8

Representing Points and Creating Patterns

From Ordered Pairs to a Table

- Ordered pairs can be represented by tables showing x-values and y-values.

Ex. Use the ordered pairs to fill in the table:

$(2,4)$, $(3,6)$, $(4,8)$, $(5,10)$, $(6,12)$, $(7,14)$

x-values	2	3	4	5	6	7
y-values	4	6	8	10	12	14

Notes:

- The x-values are in pattern $(2, 3, 4, 5, 6, 7, \dots)$ increase by 1
- The y-values are in pattern $(4, 6, 8, 10, 12, 14, \dots)$ increase by 2

1 Use the ordered pairs to fill in the table:

$(1, 0)$, $(2, 3)$, $(3, 6)$, $(4, 9)$, $(5, 12)$

x-values	1			4		
y-values		3				

2 Extend the following table, identify the pattern of x-values and y-values, then write the represented ordered pairs

x-values	2	4	6	8		
y-values	6	10	15		25	

(\quad, \quad) , (\quad, \quad) , (\quad, \quad) , (\quad, \quad) ,

(\quad, \quad) , (\quad, \quad) , (\quad, \quad)

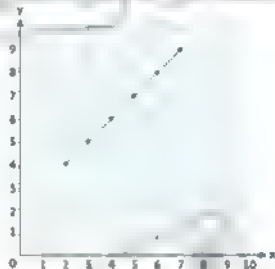
Graph Points From a Numerical Pattern

- A table showing x-values and y-values is represented in the coordinate plane using ordered pairs.

Ex. Represent the following table on the coordinate plane:

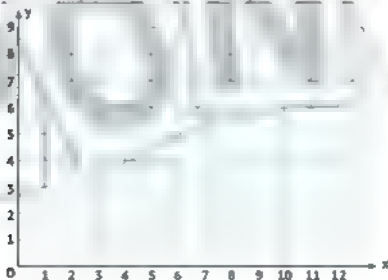
x-values	2	3	4	5	6	7
y-values	4	5	6	7	8	9

- The ordered pairs represented in the table are:
 $(2, 4)$, $(3, 5)$, $(4, 6)$
 $(5, 7)$, $(6, 8)$, $(7, 9)$
- Each ordered pair is represented by a point on the coordinate plane.
- The plotted points create a line called a line graph.



3 Use the ordered pairs to fill in the table

x-values	1	3	5	7	9	11
y-values	1	2	3	4	5	6



- Two patterns can be represented together on one coordinate grid, and they are distinguished by drawing the line that represents each pattern in a different color and making a key for the drawing.

Ex. Represent the following two tables on one graph.

Pattern 1

x-values	1	2	3	4
y-values	2	4	6	8

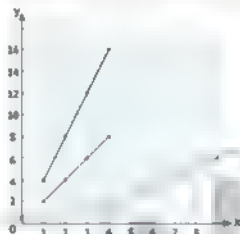
Pattern 2

x-values	1	2	3	4
y-values	4	8	12	16

- The data for each is represented by a different colour.
- A graph key is made, as follows.

■ Pattern 1

■ Pattern 2



4 Represent the following two tables on one graph:

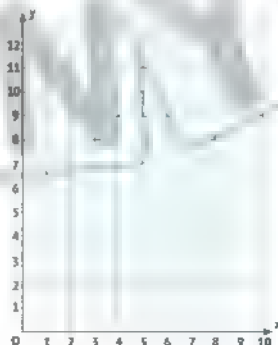
Pattern 1

x-values	1	2	3	4
y-values	1	2	3	4

Pattern 2

x-values	1	2	3	4
y-values	3	6	9	12

• Key: □ Pattern 1 Pattern 2



- 5** Kamal runs a transportation company and considers adding to his fleet of minibuses. Each bus can hold 15 passengers.

a Extend the pattern to complete the table

Total Number of Passengers, x	15	30		60		90	
Number of Minibuses, y	1	2	3		5		

b Graph the minibus data on the following coordinate plane





10

10

- 1 Use the ordered pairs to fill in the following table

$(1,3)$, $(2,4)$, $(3,5)$, $(4,6)$, $(5,7)$, $(6,8)$, $(7,9)$

x-values	1		3		5		7
y-values		4		6		8	

- 2 Represent the following two tables on the graph:

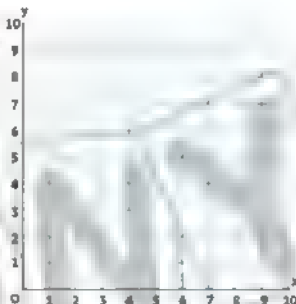
Pattern 1

x-values	1	2	3	4	5
y-values	2	3	4	5	6

Pattern 2

x-values	1	2	3	4	5
y-values	2	4	6	8	10

• Key Pattern 1 ☐ Pattern 2 ☐



- 3 Use the following number line to complete



• The value of

a A is

b B is

c C is

Graphing Real-World Data

Ex. Shimaa is selling bags of cookies in her neighborhood. She earns 2 LE for each bag of cookies she sells. Complete the following table, then graph the points on the coordinate grid.

Bags of Cookies	2	4	5	6
Money Earned (LE)	4	8	10	12

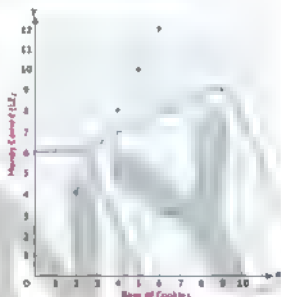
- The previous table can be represented graphically by points using the coordinate plane as follows:

- The number of bags is represented by the x-axis.

- The money that Shimaa earned is represented by the y-axis.

- The ordered pairs that represent points are as follows:

$(2, 4) - (4, 8) - (5, 10) - (6, 12)$



- Through the drawing, it is possible to know the money she earns if she sells 7 bags, which is 14 pounds, as shown on the drawing in red.
- The relationship between the x-coordinate and the y-coordinate is called the **pattern rule**:

The money that Shimaa earns = the number of bags \times 2
 $y = 2x$

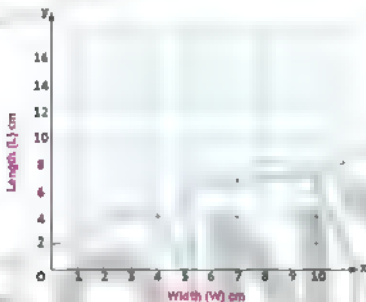
- 1 The length of a rectangle is **twice** its width in centimeters.

This information can be represented by the rule:

Length (L) = 2 X Width (W). Use the pattern to complete the table.

Width (W), X	1	2	3	4	5	6	7	8
Length ($L = 2 \times W$), Y	2	4	6	8	10	12	14	16

- Using the **width** data as x-coordinates and the **length** data as y-coordinates, plot the data on the coordinate grid. Then, draw a line to connect the points.



- Answer the following questions.

- If the width of the rectangle is 3 centimeters, then the length is _____ cm.
- If the width of the rectangle is 5 centimeters, then the length is _____ cm.
- If the length of the rectangle is 6 centimeters, then the width is _____ cm.
- If the length of the rectangle is 14 centimeters, then the width is _____ cm.

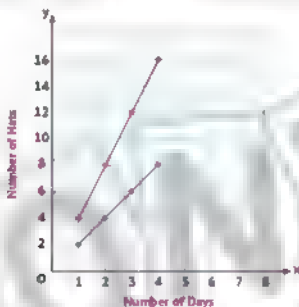
Ex. Hana and Sameh make hats. Hana makes 2 hats a day, and Sameh makes 4 hats a day. The following two tables show what each of them does:

Hana (2 hats a day)

Number of Days	Number of Hats
1	2
2	4
3	6
4	8

Sameh (4 hats a day)

Number of Days	Number of Hats
1	4
2	8
3	12
4	16



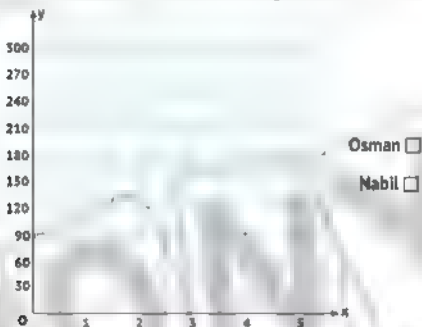
- The number of days can be represented by the x-axis
- The number of hats can be represented by the y-axis (or vice versa)
- Remember to label each axis.
- The data for each is represented by a **different color**
- A graph key is made, as follows. Hana Sameh

- 2 Nabil and Osman are in a 5-hour bike race. Nabil is traveling at a rate of 30 kilometers per hour. Osman is traveling at a rate of 60 km/hr Use that information to complete the tables:

Nabil (30 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)					

Osman (60 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)					

- Graph the data from your table on the coordinate plane.
Use a different color to represent each biker's data.
Remember to label the x-axis and the y-axis and make a key.



- 3 Answer the following questions:

- 1 At the end of the race, who traveled farther?
- 2 How much farther did he travel?
- 3 The boys biked 120 kilometers at different times. How long did it take each of them?

Nabil:

Osman:

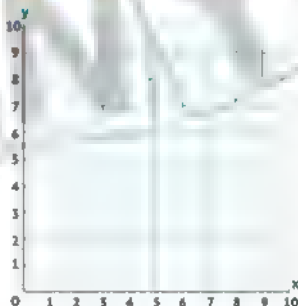
Quiz

10

- 1 Ahmed scores twice as much as his brother Omar scores, and this relationship is represented in the following table

Omar	1	3	5
Ahmed	2	4	8

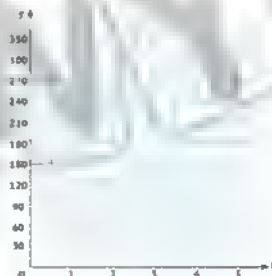
- Represent the table on the graph.



- 2 Soha drives her car at a speed of 50 km/hr. Her husband, Amgad, drives his car at a speed of 70 km/hr.

- Use this information to complete the two tables, then represent the tables graphically.

Soha 50 km/hr	Number of Hours	1	2	3	4
	Total Distance (km)				
Amgad 50 km/hr	Number of Hours	2	3	4	5
	Total Distance (km)				



- Soha Amgad

Unit

11

Volume

11.1

Understanding Volume and Capacity



1-3

Geometric Shapes Around Us
Measuring Volume in Cube Units
Same Volume, Different Shape

Learning Objectives

By the end of these lessons, the student will be able to

- Name three-dimensional figures
- Identify attributes of three-dimensional figures
- Define volume and capacity
- Find the volume of the cuboid in unit cubes
- Use unit cubes to measure the volume of rectangular prisms
- Use unit cubes and models to create right rectangular prisms with a given volume



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Lesson

Geometric Shapes Around Us

Measuring Volume in Cube Units

Same Volume, Different Shape

Three-Dimensional Shapes (Solids)

They are geometric shapes that

- have three dimensions (length - width - height).
- may have edges, faces, and vertices.
- Some of these shapes can be filled with liquid

(Hollow Solids)



Attributes of Three-Dimensional Shapes

3D Shape

	Cube	Cone	Cylinder	Rectangular Prism	Sphere	Square Pyramid
Face/Base Shape(s)	Square	Circle	Circle	Rectangle and Square	None	Triangle and Square
Number of Faces/Bases	6	1	2	6	0	5
Number of Edges	12	0	0	12	0	8
Number of Vertices	8	1	0	8	0	5

- **Volume:** The amount of space occupied by a 3D shape.

Or the number of \square cubes the shape is made of.

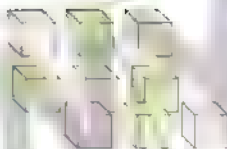
- **Capacity:** It is the amount of \square fluid that a container can contain.
- **The unit of measurement for volume:**

Cubic centimeter (cm^3) It is the volume of a cube whose edge (side) length is 1 cm.

- **The unit of measurement of capacity:**

1 milliliter = \square cm^3 and 1 liter = 1000 milliliters (cm^3)

Ex. Note the following shape:

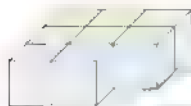


- To count the cubes that make up the shape, you must know that there are **nine** cubes.
- Number of cubes = 9 cubes

Ex. the volume = 9 cm³

Each cube represents a cubic centimeter

- 1** Find the **volume** (number of cubes) of each of the following shapes, where each cube represents 1 cm³:



a Volume = cm³



b Volume = cm³



c Volume = cm³



d Volume = cm³

Ex. ① Copy the given figure onto your grid paper

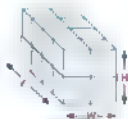
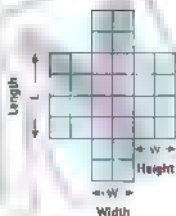
② Cut out the image.

③ Fold the shape, so that the shaded section is the base of the shape.

④ Tape the shape together to form a box.

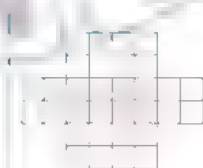
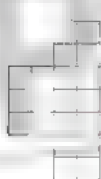
⑤ Estimate the volume of the shape

⑥ Use the centimeter cubes to measure the actual volume



Volume 16 cm^3

2 Copy the given figures onto your grid paper. Cut out the image and fold the shape to form a box. Estimate the volume of the shapes. Use the centimeter cubes to measure the actual volume



a) volume

cm^3

b) volume

cm^3

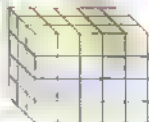
c) volume

cm^3

Layers and Slices

A rectangular prism can be divided into **layers** (horizontal) or **slices** (vertical) to calculate its volume.

Ex: Decompose the opposite rectangular prism into layers or slices and calculate its volume, since each cube represents 1 cm^3 .

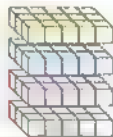


There are several ways to solve:



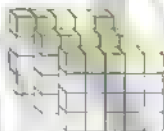
1. Number of layers: 4 layers

- The number of cubes of each layer is 15 cubes.
- Volume of the prism = $4 \times 15 = 60 \text{ cm}^3$



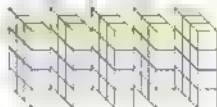
2. Number of layers: 3 slices.

- The number of cubes of each layer is 20 cubes.
- Volume of the prism = $3 \times 20 = 60 \text{ cm}^3$.



3. Number of layers: 5 slices.

- The number of cubes of each layer is 12 cubes.
- Volume of the prism = $5 \times 12 = 60 \text{ cm}^3$.



- 3 Decompose the following rectangular prisms into layers or slices and calculate their volumes, since each cube represents 1 cm^3 .



(a)



(b)



(c)



(d)

Prism

Number of Layers/Slices

Number of Cubes in Each Layer/Slice

Volume of the Prism



10

- 1 Choose the correct answer:

- (a) A sphere or cone or rectangular prism or square-based pyramid has 8 vertices.
 (b) A cuboid has 3 horizontal layers and 8 cube units in each layer. Then its volume = cube units (11 or 24 or 48 or 22)
 (c) The volume of the opposite solid is cube units (6 or 8 or 10 or 9)



- 2 Complete the following:

- (a) The opposite solid is called
 (b) The 3D shape that has 2 faces, each in the shape of a circle, is
 (c) The number of edges in a cube is



- 3 What solid is formed from folding the net square?



(a)



(b)



(c)



(d)

Unit

11

Volume

11.2

Measuring Volume



Finding a Formula

4&5

Using a Formula to Find Volume

Learning Objective

By the end of these lessons, the student will be able to:

- Identify a formula for calculating the volume of right rectangular prisms
- Use a formula to calculate the volume of right rectangular prisms
- Apply a formula to calculate the volume of right rectangular prisms



Finding the Volume of Compound Shapes

6&7

Solving Real-World Volume Story Problems

Learning Objective

By the end of these lessons, the student will be able to:

- Find the total volume of two or more cuboids
- Solve real-world story problems involving volume
- Design a city using three-dimensional shapes and a set of criteria



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Lessons

Finding a Formula Using a Formula to Find Volume

Volume Formula

- The volume of a right rectangular prism can be calculated in one of two ways.



$$V = l \times w \times h$$

Volume = Length \times Width \times Height

Labels: Length (l), Width (w), Height (h)

Ex. Multiply to find the volume of the prism:

$$\begin{aligned} V &= L \times W \times H \\ &= 12 \times 6 \times 3 = 216 \text{ cm}^3 \end{aligned}$$



- Record the **dimensions** of each of the following rectangular prisms, then find the **volume**:

Prism	Length	Width	Height	Volume
a	cm	cm	cm	cm ³
b	cm	cm	cm	cm ³
c	cm	cm	cm	cm ³

Volume

$$V = b \times h$$

Volume = **Area of the base face** \times **Height/Third dimension**

2 Layers

Area of the base =

$$L \times W = 4 \times 3 = 12 \text{ cm}$$

$$V = 12 \times 2 = 24 \text{ cm}^3$$

3 Slices

Area of the base =

$$L \times W = 4 \times 2 = 8 \text{ cm}^2$$

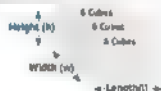
$$V = 8 \times 3 = 24 \text{ cm}^3$$

4 Slices

Area of the base =

$$L \times W = 3 \times 2 = 6 \text{ cm}^2$$

$$V = 6 \times 4 = 24 \text{ cm}^3$$



Ex. Find the volume of the prism:

$$V = b \times h = 16 \times 14 = 224 \text{ cm}^3$$

$$A = 16 \text{ cm}^2$$

14 cm

2 Record the **dimensions** of each of the following rectangular prisms, then find the **volume**.

$$A = 9 \text{ cm}^2$$

5 cm

①

$$A = 6 \text{ cm}^2$$

15 cm

②

$$A = 35 \text{ cm}^2$$

4 cm

③

Prism	Base/Face Area	Third Dimension	Volume
①	cm	cm	cm
②	cm	cm	cm
③	cm	cm	cm

Find the Missing Dimension

- If we have the volume of a rectangular prism and two of its dimensions, we can find the unknown dimension using one of the formulas shown in the following figure.



$$V = L \times W \times h$$

$$L = \frac{V}{W \times h}$$



$$W = \frac{V}{L \times h}$$

$$h = \frac{V}{L \times W}$$



$$V = L \times W \times h$$

$$h = \frac{V}{L \times W}$$



$$V = 400 \text{ cm}^3$$

(Face area)

$$= 5 \times 10 = 50 \text{ cm}^2$$

$$L = \frac{V}{(W \times h)}$$

$$= 400 \div 50 = 8 \text{ cm}$$



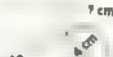
$$V = 144 \text{ cm}^3$$

(Face area)

$$= 4 \times 9 = 36 \text{ cm}^2$$

$$W = \frac{V}{(L \times h)}$$

$$= 144 \div 36 = 4 \text{ cm}$$



$$V = 480 \text{ cm}^3$$

(Face area)

$$= 12 \times 4 = 48 \text{ cm}^2$$

$$h = \frac{V}{(L \times W)}$$

$$= 480 \div 48 = 10 \text{ cm}$$

3 Complete the following table:

Prism	Length	Width	Height	Volume
a	5 cm	3 cm	2 cm	cm ³
b	cm	2 cm	5 cm	60 cm ³
c	10 cm	cm	4 cm	120 cm ³
d	8 cm	5 cm	cm	80 cm ³

- If we have the **volume** of a rectangular prism and the **area** of one of the **faces**, then we can find the third dimension using the following **formula**:



$$b \times h = V$$

$$= V \div b$$

$$h =$$

Height/Third dimension

Volume

÷

b

=

h

- Ex.** The volume of the rectangular prism shown is **400** cubic centimeters. Find the missing dimension.

$$\text{Base area} = L \times W = 10 \times 5 = 50 \text{ cm}^2$$

$$\text{Height} = V \div b = 400 \div 50 = 8 \text{ cm}$$

5 cm

10 cm

- 4 The volume of a rectangular prism is **360** m³, its length is **15** m, and its width is **6** m. Find its height.

- 5 The volume of a rectangular prism is **240** cm³, its base area is **60** m². Find its height.

6 Which is bigger in volume?

A rectangular prism with dimensions of 8 cm, 5 cm, and 3 cm, or a rectangular prism with a base area of 20 cm² and a height of 6 cm.



Quiz

10

T Choose the correct answer:

- a The volume of rectangular prism =
($l + w + h$ or $(l + w) \times h$ or $l \times w + h$ or $l \times w \times h$)
- b The dimensions of a cuboid is 3 cm, 5 cm, and 2 cm, then its volume is
cm³ (30 or 10 or 16 or 21)
- c The volume of a cuboid is 40 cm³ and the base area is 10 cm² then its
height = cm. (400 or 40 or 4 or 5)
- d The base area of a cuboid is 30 cm², and its height is 3 cm, then its
volume is cm³. (90 or 60 or 900 or 33)

2 Find the volume of each of the following.

a



b

Area 5 cm²

5 cm

c

Lessons

Finding the Volume of Compound Shapes Solving Real-World Volume Story Problems

Finding the Volume of Compound Shapes

Ex. Calculate the volume of the following compound shape

- Volume of prism (1)

$$V = L \times W \times h = 8 \times 5 \times 7 = 280 \text{ cm}^3$$

- Volume of prism (2)

$$V = L \times W \times h = 5 \times 4 \times 2 = 40 \text{ cm}^3$$

- Volume of the shape $V = 280 + 40 = 320 \text{ cm}^3$



- 1 Calculate the volume of the following compound shape:

- Ⓐ Volume of prism (1):

- Ⓑ Volume of prism (2):

- Ⓒ Volume of the shape:



- 2 Calculate the volume of the following compound shape:

- Ⓐ Volume of prism (1)

- Ⓑ Volume of prism (2):

- Ⓒ Volume of prism (3):

- Ⓓ Volume of the shape:



Ex. A car for transporting building materials has a box in the shape of a rectangular prism with a length of 5 m, a width of 2 m, and a height of 3 m. Sand has been placed to a height of 2 m. What is the size of the empty part of the box?

- **Volume of the box:** $V = L \times W \times h = 5 \times 2 \times 3 = 30 \text{ m}^3$
- **Volume of sand:** $V = L \times W \times h = 5 \times 2 \times 2 = 20 \text{ m}^3$
- **Volume of the empty part:** $V = 30 - 20 = 10 \text{ m}^3$

Height of the empty part: $3 - 2 = 1 \text{ m}$.

Volume the empty part $V = 5 \times 2 \times 1 = 10 \text{ m}^3$



3 Fares built a small planter box for his window. He planned to fill it to the top with 12,000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

4 Mouataz built a model of a sarcophagus from cardboard. The model was 30 cm long, 10 cm wide, and 8 cm tall. Is it possible for Mouataz to fit a rectangular canopic chest with an interior volume of 3 000 cm^3 inside?

Support your thinking with a drawing and an equation.

Quiz

Volume

10

1 Calculate the volume of each of the following compound shapes:

- a Volume of prism (1) is
- b Volume of prism (2) is
- c Volume of the shape is



2 Which is greater in volume:

A rectangular prism whose dimensions are 5 cm, 3 cm, and 8 cm

Or a rectangular prism whose base area is 20 cm^2 , and its height is 7 cm

3 A builder used 300 bricks for building up a wall. If each brick is in the shape of a cuboid of dimensions 20 cm, 10 cm, and 5 cm, calculate the volume of the wall.

Unit

12

Pie Charts

Concept 12.1

Understanding Pie Charts

Lessons

1-3

Exploring Pie Charts
Interpreting Data in a Pie Chart
Making Pie Charts

Learning Objectives

By the end of these lessons, the student will be able to:

- Define the elements of a pie chart
- Identify connections between pie charts, fractions, and degrees of a circle
- Interpret data in a pie chart
- Shade a pie chart to display a set of data
- Ask and answer questions about data in a pie chart



I ♥ Math



Lessons 1-3

Exploring Pie Charts Interpreting Data in a Pie Chart Making Pie Charts

Unit 12

Remember

Line Plot

It is used to show **repetition** on a number line.



Bar Graph

It is used to **compare different** things.



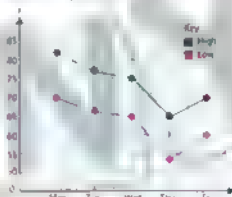
Double Bar Graph

It is used to **compare two** things.



Line Graph

It is used to track **changes** over a period of time.



Representing Data Using Pie Charts

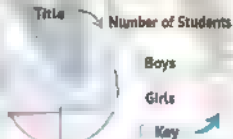
It is one of the ways to represent data, and this is done by using a **circle** that is divided into **parts** according to the **given data**, and each part of the circle is called a **pie sector**.

Ex. The following pie chart represents a comparison of the numbers of boys and girls in a school.



Notes: • Part of the circle (circular sector) represents boys and the other represents girls.

- The size of each sector is proportional to the number it represents (the number of boys > the number of girls).
- The chart has a title and a key.



Pie Charts and Fractions

When representing data using pie charts, the data can be converted into fractions to find out what each element represents in relation to the total data and divide the circle according to these fractions.

Ex. The following table represents the results of the survey about the most preferred sport by a group of students:

Sport	Football	Basketball	Swimming	Gymnastics
Number of Students	12	6	3	3



Notes: • The total number of students who participated in the survey $3 + 3 + 6 + 12 = 24$ students.

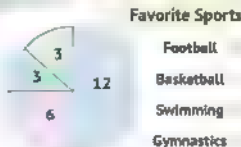
- The fraction that represents the number of students who prefer

a) Football = $\frac{12}{24} = \frac{1}{2}$

b) Basketball = $\frac{6}{24} = \frac{1}{4}$

c) Swimming = $\frac{3}{24} = \frac{1}{8}$

d) Gymnastics = $\frac{3}{24} = \frac{1}{8}$



- 1 The following pie chart represents the amounts that Galal spent in 4 days. If the total amount he spent was 60 pounds, what fraction represents what he spent each day?

Ⓐ Sunday

Ⓑ Monday:

Ⓒ Tuesday:

Ⓓ Wednesday:



- 2 The following frequency table shows the favorite ice cream flavors of a group of children:

Flavor	Chocolate	Pistachio	Mastic	Mango
Number of Children	18	9	6	3

- Ⓐ Choose the fraction that represents each flavor of ice cream. Shade the following pie chart, identify its parts, and write the title and key:

($\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{6}$ or $\frac{1}{12}$)

The fraction representing:

1 Chocolate ice cream.

2 Pistachio ice cream:

3 Mastic ice cream:

4 Mango ice cream:

- 5 Answer the following questions:

- 1 What is the most preferred type of ice cream?
- 2 What is the least preferred type of ice cream?
- 3 How many more children chose pistachio ice cream than those who chose mango ice cream?
- 4 How many fewer children chose mastic ice cream than those who chose chocolate ice cream?
- 5 How many children participated in the survey?

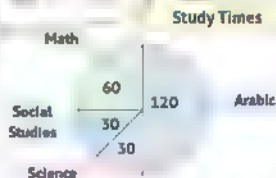




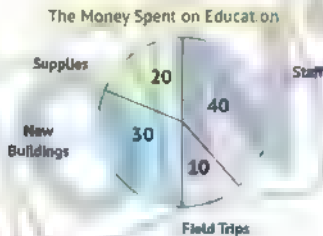
Note: • What each part of a pie chart represents can be expressed using decimals.

Ex: The following pie chart shows the study times in minutes that Adel spends per day:

Subject	Fraction	Decimal
Arabic	$\frac{120}{240} = \frac{1}{2}$	0.5
Math	$\frac{60}{240} = \frac{1}{4}$	0.25
Science	$\frac{30}{240} = \frac{1}{8}$	0.125
Social Studies	$\frac{30}{240} = \frac{1}{8}$	0.125



3 The following pie chart shows the money spent on education:



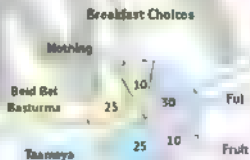
• Complete the following table

Spending Aspect	Staff	Supplies	New Buildings	Field Trips
Decimal				

- 4 The following pie chart represents the favorite breakfast of a number of students. Study the chart carefully.

Complete the following table.

Breakfast	Number of Students (Frequency)	Fraction	Decimal
Ful			
Fruit			
Taameya			
Beid Bel Basturma			
Nothing			



Answer the following questions:

- What is the most frequent breakfast choice?
- What are the two choices that half of the students chose?
- What are the least two choices that the students chose?

Fractions of a Circle and Circular Degrees

- When a circle is divided into equal parts, each part represents an angle of one degree.

- 5 Select the circular degrees that match the fraction of the shaded circle. A circle has 360 degrees.

<p>a</p> <p>90° 45°</p> <p>60° 180°</p>	<p>b</p> <p>45° 90°</p> <p>120° 180°</p>
<p>c</p> <p>30° 120°</p> <p>60° 50°</p>	<p>d</p> <p>90° 45°</p> <p>60° 30°</p>

Quiz

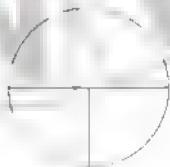
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- 1 A librarian made an inventory of the books in his library, and their types, he found the following:

$\frac{1}{4}$ of the books are religious.

$\frac{1}{4}$ of the books are literary.

$\frac{1}{2}$ of the books are scientific

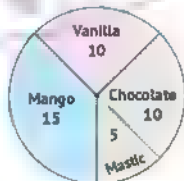


Represent these data using the previous pie chart. If the total number of books is 600, complete

- a The number of religious books is
- b The number of literary books is
- c The number of scientific books is

- 2 The following figure shows the favorite ice cream flavors of a group of 40 children. Complete the following table:

Flavor	Fraction	Decimal
Mango		
Vanilla		
Chocolate		
Mastic		





سلسلة كتب الأستاذ

Math

**Exercises, Final Revision,
Exams & Answers**

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Second Edition



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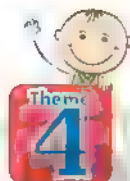
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Unit 7 Adding and Subtracting Fractions

Concept 7.1 Adding and Subtracting Fractions With Unlike Denominators

Unit 8 Adding and Subtracting Mixed Numbers

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Unit 9 Multiplying and Dividing Fractions

Concept 9.1 Multiplying Fractions and Mixed Numbers

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Concept 7.1 Adding and Subtracting Fractions With Unlike Denominators

Lesson 1

1 Find the **smallest like denominator** for the fractions listed. Then, change each fraction so that each fraction is rewritten with the smallest like denominator.

a $\frac{2}{3}$ and $\frac{5}{6}$ $\frac{2}{3} =$ $\frac{5}{6} =$

b $\frac{1}{5}$ and $\frac{3}{10}$ $\frac{1}{5} =$ $\frac{3}{10} =$

c $\frac{2}{4}$ and $\frac{5}{8}$ $\frac{2}{4} =$ $\frac{5}{8} =$

d $\frac{3}{10}$ and $\frac{1}{2}$ $\frac{3}{10} =$ $\frac{1}{2} =$

e $\frac{4}{6}$ and $\frac{2}{4}$ $\frac{4}{6} =$ $\frac{2}{4} =$

f $\frac{3}{9}$ and $\frac{2}{6}$ $\frac{3}{9} =$ $\frac{2}{6} =$

g $\frac{1}{4}$ and $\frac{1}{8}$ $\frac{1}{4} =$ $\frac{1}{8} =$

h $\frac{3}{8}$ and $\frac{5}{6}$ $\frac{3}{8} =$ $\frac{5}{6} =$

i $\frac{1}{5}$ and $\frac{1}{3}$ $\frac{1}{5} =$ $\frac{1}{3} =$

① $\frac{4}{7}$ and $\frac{1}{2} \rightarrow \frac{4}{7} = \frac{\quad}{\quad}$, $\frac{1}{2} = \frac{\quad}{\quad}$

② $\frac{3}{4}$ and $\frac{1}{7} \rightarrow \frac{3}{4} = \frac{\quad}{\quad}$, $\frac{1}{7} = \frac{\quad}{\quad}$

③ $\frac{3}{8}$ and $\frac{4}{9} \rightarrow \frac{3}{8} = \frac{\quad}{\quad}$, $\frac{4}{9} = \frac{\quad}{\quad}$

- 2 Saleh has a piece of land, and he wants to grow $\frac{1}{5}$ of the land with flowers and $\frac{1}{2}$ with vegetables.

How many parts will Saleh divide his land into?

How many parts of flowers and vegetables will he plant?

- 3 Hussam owns an amount of money. He gave his son, Ali, $\frac{1}{2}$ of the money and gave his daughter, Samah, $\frac{1}{2}$ of the money.

How many parts will Hussam divide that money into?

How many parts will each of Ali and Samah get?

Assessment

Unit 7

1 Choose the correct answer:

a $\frac{9}{4}$ is a/an

(proper fraction or improper fraction or mixed number or whole number)

b $\frac{45}{60} =$

($\frac{9}{12}$ or $\frac{15}{20}$ or $\frac{3}{4}$ or $\frac{5}{6}$)

c $\frac{15}{30} =$

($\frac{1}{2}$ or $\frac{3}{10}$ or $\frac{5}{6}$ or $\frac{1}{3}$)

d $\frac{5}{6} + \frac{7}{6} =$

($1\frac{1}{3}$ or $\frac{4}{3} + \frac{2}{3}$ or $\frac{1}{4} + \frac{5}{4}$ or $\frac{3}{2} + \frac{3}{2}$)

e $5\frac{1}{6} =$

($\frac{51}{6}$ or $1\frac{5}{6}$ or $\frac{12}{6}$ or $\frac{31}{6}$)

2 Complete the following:

a $\frac{15}{3} =$

b $\frac{4}{5} = \frac{24}{\quad}$

c The **smallest** like denominator for the fractions $\frac{3}{4}$ and $\frac{1}{3}$ is

d For both fractions $\frac{5}{6}$ and $\frac{3}{8}$ to have a like denominator, they should be

$\frac{5}{6} = \frac{3}{8}$

$\frac{5}{6} = \frac{3}{8}$

$\frac{5}{6} = \frac{3}{4}$

3 Answer the following.

Emad has a piece of paper in the shape of a rectangle that he wants to divide into **equal parts**, so that he paints $\frac{1}{3}$ of the paper with red, $\frac{1}{6}$ of the paper with green, and $\frac{1}{2}$ of the paper with yellow.

- How many parts does Emad need to divide the paper?

Number of parts = _____ parts.

- What fraction represents the part colored in each color after division?

Red = $\frac{1}{3} =$

Green = $\frac{1}{6} =$

Yellow = $\frac{1}{2} =$

Lesson 2-4

1 Find the result using the following models.

a $\frac{3}{4} + \frac{1}{8} =$

b $\frac{3}{4} - \frac{1}{2} =$

c $\frac{5}{6} + \frac{1}{3} =$

d $\frac{1}{3} - \frac{1}{6} =$

e $\frac{5}{8} + \frac{3}{4} =$

f $\frac{4}{5} - \frac{7}{10} =$

g $\frac{1}{2} + \frac{2}{3} =$

h $\frac{1}{2} - \frac{3}{8} =$

i $\frac{2}{3} + \frac{1}{4} =$

j $\frac{3}{4} - \frac{1}{3} =$

2 Find the result:

Ⓐ $\frac{3}{4} + \frac{5}{12} =$

Ⓑ $\frac{15}{15} - \frac{2}{3} =$

Ⓒ $\frac{7}{9} - \frac{1}{3} =$

Ⓓ $\frac{1}{2} + \frac{11}{12} =$

Ⓔ $\frac{5}{8} - \frac{1}{2} =$

Ⓛ $\frac{7}{9} - \frac{2}{3} =$

Ⓜ $\frac{6}{7} - \frac{3}{14} =$

Ⓝ $\frac{5}{12} - \frac{7}{36} =$

Ⓟ $\frac{4}{5} + \frac{3}{10} =$

Ⓡ $\frac{2}{3} + \frac{17}{30} =$

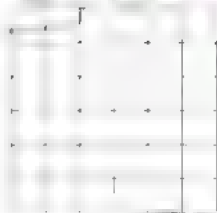
Ⓢ $\frac{3}{4} + \frac{1}{2} + \frac{5}{8} =$

$$\textcircled{1} \quad 1 - \frac{1}{2} - \frac{1}{3} =$$

$$\textcircled{10} \quad 1 + \frac{4}{5} + \frac{3}{10} =$$

$$\textcircled{11} \quad 2 - \frac{7}{9} - \frac{1}{6} =$$

- 3** Abeer, Badr, Ehab, and Doha are making a quilt of 36 equal-sized fabric squares to represent flowering plants in Egypt. Abeer made squares for $\frac{11}{36}$ of the quilt's area. Badr made squares for $\frac{1}{6}$ of the quilt's area.



What fraction of the quilt must Ehab make so that $\frac{1}{6}$ of the quilt's area will remain for Doha? Represent the different squares needed for the given fractions of the quilt. Label the diagram and explain your thinking.

Assessment

Unit 7

1 Complete the following:

a $\frac{3}{4} = \frac{9}{\quad}$

b $\frac{14}{28} = \frac{\quad}{\quad}$ (In the simplest form)

c For both fractions $\frac{3}{8}$ and $\frac{2}{3}$ to have a like denominator, they should be

$\frac{3}{8} = \frac{\quad}{\quad}$, $\frac{2}{3} = \frac{\quad}{\quad}$

d The subtraction operation represented on the opposite model is $\frac{3}{4} - \frac{\quad}{\quad} = \frac{\quad}{\quad}$



2 Find the result:

a $\frac{2}{5} + \frac{3}{10} = \frac{\quad}{\quad}$

b $\frac{1}{2} - \frac{1}{8} = \frac{\quad}{\quad}$

c $\frac{4}{5} + \frac{1}{2} = \frac{\quad}{\quad}$

d $\frac{2}{3} - \frac{1}{4} = \frac{\quad}{\quad}$

3 Answer the following.

Hana has a pie. She gave $\frac{3}{4}$ of the pie to her sister, Samah, and she gave

$\frac{1}{3}$ of the pie to her brother, Adel, then she took the rest.

What fraction represents the part that Hana took?

Explain your answer using the model shown.



Assessment on Concept 1



First: Choose the correct answer:

1. The fraction $\frac{4}{7}$ is close to

2. $\frac{5}{6} - \frac{1}{3} =$

3. $\frac{3}{4} + \frac{1}{6} =$

4. $\frac{23}{11} =$

5. $\frac{3}{5} =$ 25

(1 $\frac{1}{2}$ or 1 or $\frac{1}{2}$ or 0)

($\frac{1}{2}$ or $\frac{6}{9}$ or $\frac{4}{6}$ or $\frac{4}{2}$)

($\frac{11}{12}$ or $\frac{3}{12}$ or $\frac{4}{12}$ or $\frac{4}{10}$)

(2 $\frac{1}{3}$ or 3 $\frac{2}{11}$ or 2 $\frac{1}{11}$ or 2 $\frac{3}{12}$)

(30 or 25 or 15 or 35)

Second. Complete the following:

1. $\frac{8}{9} - \frac{1}{3} =$

2. The addition operation represented on the opposite models is

3. $\frac{1}{5} + \frac{1}{4} = \frac{2}{3}$
 $+$ $-\frac{1}{4} = \frac{3}{8}$

5. $\frac{15}{30} = 2$

Third: Answer the following:

- Hana has $\frac{7}{8}$ kilogram of flour. She used $\frac{1}{2}$ kilogram to make pancakes, and $\frac{1}{4}$ kilogram to make bread. How much flour does she have left?

Assessment 1 on



First: Choose the correct answer.

1 $\frac{35}{45} = \frac{\quad}{\quad}$

($\frac{7}{5}$ or $\frac{5}{7}$ or $\frac{7}{9}$ or $\frac{5}{9}$)

2 $\frac{24}{48} =$ (In the simplest form)

($\frac{1}{2}$ or $\frac{2}{4}$ or $\frac{3}{6}$ or $\frac{4}{8}$)

3 $\frac{3}{5} + \frac{3}{5} =$

($\frac{3}{5}$ or $\frac{6}{5}$ or $\frac{3}{10}$ or $\frac{6}{10}$)

4 The smallest like denominator for the fractions $\frac{1}{3}$ and $\frac{3}{4}$ is

(48 or 36 or 24 or 12)

$\frac{12}{48} = \frac{\quad}{12}$

(48 or 1 or 3 or 4)

Second: Complete the following.

1 $\frac{5}{9} = \frac{45}{\quad}$

$\frac{1}{3}$ of 21 is

2 $\frac{3}{8} + \frac{1}{6} =$

4 $\frac{5}{9} - \frac{1}{2} =$

5 $\frac{1}{2} + \frac{\quad}{\quad} = \frac{3}{4}$

Third: Answer the following:

- Sameh bought $\frac{2}{3}$ kilogram of flour, and $\frac{1}{4}$ kilogram of sugar. What is the total mass of what Sameh bought?

Assessment 2 on



First: Complete the following:

1. $\frac{36}{60} =$

(In the simplest form)

2. $\frac{5}{5} = \frac{12}{15}$

3. $\frac{6}{9} - \frac{5}{9} =$

$\frac{2}{3} + \frac{2}{3} =$

$3 \frac{2}{7} = \frac{\quad}{7}$

Second: Choose the correct answer:

1. $\frac{3}{8} + \frac{3}{8} =$

($\frac{3}{8}$ or $\frac{3}{16}$ or $\frac{3}{4}$ or $\frac{6}{16}$)

2. $\frac{1}{5} = \frac{\quad}{2}$

($\frac{1}{3}$ or $\frac{2}{7}$ or $\frac{3}{10}$ or $\frac{1}{5}$)

3. $\frac{24}{36} =$

($\frac{1}{2}$ or $\frac{8}{9}$ or $\frac{4}{3}$ or $\frac{2}{4}$)

4. The result of the subtraction process represented on the opposite model is

($\frac{1}{2}$ or $\frac{8}{9}$ or $\frac{3}{10}$ or $\frac{7}{10}$)



Third: Answer the following:

1. Find the result in the simplest form

a. $\frac{3}{4} + \frac{5}{6} =$

b. $\frac{1}{2} - \frac{1}{6} =$

2. Write three fractions that are equivalent to the fraction $\frac{3}{5}$

$\frac{3}{5} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

8.1 Working with Mixed Numbers

Learning 1

1 Rewrite each of the values shown in two different forms

a $\frac{12}{5} =$

=

b $\frac{18}{7} =$

=

c $\frac{9}{4} =$

=

d $\frac{16}{5} =$

=

e $\frac{18}{6} =$

=

f $\frac{6}{3} =$

=

g $3\frac{4}{5} =$

=

h $1\frac{6}{5} =$

=

i $2\frac{2}{7} =$

=

j $2\frac{5}{3} =$

=

2 Find the result using the strategy you prefer. Simplify, if possible.

a $2\frac{3}{8} + 3\frac{1}{8} =$

b $4\frac{5}{6} + 3\frac{1}{6} =$

c $1\frac{2}{3} + 2\frac{2}{3} =$

d $5\frac{3}{7} - 2\frac{1}{7} =$

e $4\frac{3}{8} - 1\frac{5}{8} =$

f $8\frac{1}{5} - 4\frac{3}{5} =$

g $4\frac{2}{3} =$

3 Find the value of the variable in each equation:

a $3\frac{1}{5} + a = 5\frac{4}{5} \rightarrow a =$

b $b + 3\frac{1}{4} = 5 \rightarrow b =$

c $4\frac{2}{3} - c = 2\frac{1}{3} \rightarrow c =$

d $4\frac{2}{8} - d = 2\frac{1}{8} \rightarrow d =$

e $e - 3\frac{4}{7} = 4\frac{1}{7} \rightarrow e =$

f $2\frac{1}{4} + f = 5\frac{3}{4} \rightarrow f =$

g $g - 2\frac{3}{4} = 2\frac{3}{4} \rightarrow g =$

4 Complete:

a $3\frac{4}{5} =$

b $\frac{15}{7} =$

c $2\frac{1}{5} = 1$

d $3\frac{7}{5} = 4$

e $\frac{3}{3} + \frac{3}{3} + \frac{3}{3} = 1$

f $2\frac{1}{4} = 4 + \frac{\quad}{4} + \frac{\quad}{4}$

g $5 = 3\frac{1}{4}$

h $\frac{7}{8} = \frac{6}{8}$

i $\quad + 3\frac{3}{4} = 8$

j $1\frac{1}{2} + \quad = 3$

Assessment

Unit 8

1 Complete the following.

Ⓐ $3\frac{5}{3} = 3 + \frac{\quad}{\quad}$

Ⓑ $2\frac{4}{5} + \frac{\quad}{\quad} = 3\frac{1}{5}$

Ⓒ $3 + \frac{1}{6} = \frac{\quad}{\quad}$

Ⓓ $\frac{15}{3} = 2 + \frac{\quad}{\quad}$

Ⓔ $\frac{14}{28} = \frac{\quad}{\quad}$

2 Choose the correct answer:

Ⓐ $3\frac{1}{6} - 2\frac{3}{6} =$

Ⓑ $\frac{45}{60} =$ (In the simplest form)

Ⓒ $3\frac{3}{4} \times$

Ⓓ $5 - 3\frac{1}{2} =$

Ⓔ $\frac{15}{4} \times$

($\frac{4}{6}$ or $5\frac{2}{6}$ or $1\frac{4}{6}$ or $1\frac{2}{6}$)

($\frac{5}{6}$ or $\frac{15}{20}$ or $\frac{9}{12}$ or $\frac{3}{4}$)

($1\frac{8}{4}$ or $2\frac{7}{4}$ or $4\frac{1}{4}$ or $10\frac{10}{4}$)

($1\frac{1}{2}$ or $1\frac{2}{2}$ or $8\frac{1}{2}$ or $2\frac{1}{2}$)

($2\frac{3}{4}$ or $3\frac{1}{4}$ or $1\frac{11}{4}$ or $1\frac{5}{4}$)

3 Answer the following:

- Ⓐ Najl and his brother participated in harvesting the cotton crop, and there were 10 square meters of cotton needed to be harvested. Najl and his brother were able to harvest $3\frac{3}{4}$ from the cotton. How many square meters of cotton are remaining?

- Ⓑ Find $(4\frac{1}{5})$ in 4 other forms.

$4\frac{1}{5} = \quad = \quad = \quad =$

Level

2

- 1 Rewrite the following mixed numbers using a like denominator in two different ways

a $5 \frac{15}{27} + 10 \frac{5}{6}$

First Way

$$5 \frac{15}{27} =$$

$$10 \frac{5}{6} =$$

Second Way

$$5 \frac{15}{27} =$$

$$10 \frac{5}{6} =$$

b $1 \frac{4}{10} + 1 \frac{2}{4}$

First Way

$$1 \frac{4}{10} =$$

$$1 \frac{2}{4} =$$

Second Way

$$1 \frac{4}{10} =$$

$$1 \frac{2}{4} =$$

c $2 \frac{4}{6} + 3 \frac{8}{8}$

First Way

$$2 \frac{4}{6} =$$

$$3 \frac{8}{8} =$$

Second Way

$$2 \frac{4}{6} =$$

$$3 \frac{8}{8} =$$

Fractions, Decimals, and Proportional Relationships

d $3 \frac{10}{24}$, $3 \frac{24}{48}$

$$3 \frac{10}{24} = \quad , 3 \frac{24}{48} =$$

Second Way

$$3 \frac{10}{24} =$$

$$3 \frac{24}{48} =$$

e $3 \frac{10}{16}$, $33 \frac{9}{12}$

$$3 \frac{10}{16} = \quad , 33 \frac{9}{12} =$$

Second Way

$$3 \frac{10}{16} =$$

$$3 \frac{9}{12} =$$

f $3 \frac{6}{8}$, $3 \frac{5}{10}$

$$3 \frac{6}{8} = \quad , 3 \frac{5}{10} =$$

Second Way

$$3 \frac{6}{8} =$$

$$3 \frac{5}{10} =$$

① $2\frac{3}{12} + 2\frac{4}{8}$

[]

$2\frac{3}{12} =$

$2\frac{4}{8} =$

Second Way

$2\frac{3}{12} =$

$2\frac{4}{8} =$

② $3\frac{4}{10} + 1\frac{4}{6}$

[]

$3\frac{4}{10} =$

$1\frac{4}{6} =$

Second Way

$3\frac{4}{10} =$

$1\frac{4}{6} =$

12 Estimate the following by using like denominators.

① $3\frac{5}{10} =$

② $3\frac{18}{81} =$

③ $5\frac{3}{18} =$

Assessment

Unit 8

1 Choose the correct answer:

- ☐ The mixed numbers $2\frac{5}{10}$ and $3\frac{6}{9}$ by using a like denominator are _____ and _____

($2\frac{3}{6}, 3\frac{4}{6}$ ☒ $2\frac{6}{12}, 3\frac{6}{9}$ ☒ $2\frac{1}{2}, 3\frac{2}{3}$ ☒ $2\frac{1}{5}, 3\frac{1}{3}$)

☐ $\frac{7}{8} + \frac{5}{8} =$ _____

($\frac{12}{16}$ ☒ $\frac{2}{8}$ ☒ $\frac{3}{2}$ ☒ $\frac{8}{12}$)

- ☐ The LCM of 8 and 6 is _____

(48 ☒ 18 ☒ 16 ☒ 24)

☐ $\frac{25}{7} \times$ _____

($4\frac{3}{7}$ ☒ $3\frac{4}{7}$ ☒ $2\frac{5}{7}$ ☒ $1\frac{15}{7}$)

☐ $3\frac{8}{5} =$ _____

($4\frac{5}{3}$ ☒ $4\frac{7}{3}$ ☒ $2\frac{9}{3}$ ☒ $\frac{27}{3}$)

2 Complete the following:

☐ $3\frac{1}{2} + \dots = 4$

☐ $4\frac{3}{4} = 3\frac{4}{4}$

☐ $\frac{15}{45} = \dots$ (In the simplest form)

- ☐ The smallest like denominator of $\frac{8}{12}$ and $\frac{5}{10}$ is _____

☐ $\frac{48}{60} = \dots$ (In the simplest form)

3 Write the following mixed numbers by using:

☐ $3\frac{2}{6} =$ _____

☐ $8\frac{6}{8} =$ _____

☐ $7\frac{5}{10} =$ _____

Assessment on Concept 1



First: Choose the correct answer:

1. $4 \frac{5}{7} =$

($\frac{45}{7}$ or $\frac{28}{7}$ or $2 \frac{7}{7}$ or $3 \frac{12}{7}$)

2. $\frac{25}{8} =$

($1 \frac{1}{8}$ or $3 \frac{5}{8}$ or $2 \frac{9}{8}$ or $2 \frac{5}{8}$)

3. $8 \frac{1}{2} = 8$ 16

(4 or 8 or 2 or 1)

4. $3 \frac{1}{4} +$ = $5 \frac{1}{2}$

($1 \frac{1}{2}$ or $2 \frac{1}{2}$ or $1 \frac{1}{4}$ or $2 \frac{1}{4}$)

5. $7 \frac{1}{6} -$ = $2 \frac{1}{2}$

($4 \frac{4}{6}$ or $5 \frac{4}{6}$ or $5 \frac{2}{6}$ or $4 \frac{2}{6}$)

Second: Complete the following:

$\frac{13}{5} = 1 \frac{3}{5} = 2 \frac{3}{5}$

$4 \frac{3}{7} =$

3. $5 \frac{1}{8} + 3 \frac{5}{8} =$

(In the simplest form)

4. $7 \frac{3}{5} - 4 \frac{4}{5} =$

5. $\frac{15}{20} =$, $\frac{12}{18} =$

(Using the smallest like denominator)

Third: Answer the following:

- Ahmed had 10 pounds, he bought a pen for $4 \frac{3}{4}$ pounds, and an eraser for $2 \frac{3}{4}$ pounds. How much money is left with Ahmed?

8.2 Adding and Subtracting Mixed Numbers with Unlike Denominators

Example 3

1 Add using the following models:

Ⓐ $2\frac{1}{3} + 2\frac{1}{2} =$



Ⓑ $3\frac{1}{4} + 1\frac{1}{2} =$



Ⓒ $2\frac{2}{3} + 1\frac{3}{4} =$



Ⓓ $1\frac{4}{5} + 1\frac{1}{2} =$



Ⓔ $2\frac{1}{8} + \frac{3}{4} =$



Ⓕ $1\frac{1}{6} + 1\frac{5}{12} =$



2 Subtract using the following models:

a $3\frac{1}{2} - 2\frac{1}{4} =$

b $2\frac{4}{5} - 1\frac{1}{2} =$

c $3\frac{3}{4} - 2\frac{2}{8} =$

d $3\frac{1}{3} - 2\frac{1}{2} =$

e $4 - 3\frac{1}{4} =$

f $4\frac{3}{4} - 2\frac{5}{6} =$

3 Subtract using the following number lines

a $4\frac{1}{2} - 2\frac{1}{5} =$



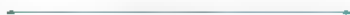
b $3\frac{1}{4} - 1\frac{1}{5} =$



c $6\frac{1}{3} - 3\frac{3}{4} =$



d $9\frac{3}{5} - 7\frac{1}{2} =$



4 Study the following models, then write the **addition** problems that represent them, and find the **result**:



5 Study the following models, then write the **subtraction** problems that represent them, and find the **result**:



Assessment

on Lesson 3

Unit 8

1 Choose the correct answer:

Ⓐ The subtraction problem that represents the following model is

$(1\frac{3}{8} - 1\frac{1}{2} \text{ or } 1\frac{1}{2} - 1\frac{3}{8})$
 $(2\frac{1}{2} - 1\frac{3}{8} \text{ or } 2\frac{3}{8} - 1\frac{1}{2})$



Ⓑ The subtraction problem that represents the following number line is

$(4\frac{2}{3} - 3\frac{3}{4} \text{ or } 4\frac{1}{3} - 3\frac{1}{4} \text{ or } 4\frac{2}{3} - 3\frac{1}{4} \text{ or } 4\frac{3}{4} - 3\frac{1}{3})$

Ⓒ The addition problem that represents the following model is

$(1\frac{1}{3} + 1\frac{2}{3} \text{ or } 1\frac{1}{3} + 1\frac{1}{2})$
 $(1\frac{2}{3} + 1\frac{1}{2} \text{ or } 1\frac{2}{3} + 1\frac{3}{6})$



Ⓓ $\frac{5}{8} + \frac{3}{4} =$

$(\frac{1}{8} \text{ or } \frac{8}{12} \text{ or } 1\frac{3}{8} \text{ or } \frac{8}{8})$

Ⓔ $3\frac{1}{4} + 2\frac{3}{4} =$

$(1\frac{1}{4} \text{ or } 5\frac{1}{2} \text{ or } 6 \text{ or } 5)$

2 Complete:

Ⓐ $\frac{15}{18} = \frac{5}{6}$

Ⓑ $2\frac{6}{5} = 3$

Ⓒ $2\frac{3}{2} =$

Ⓓ $3\frac{3}{4} + 1\frac{3}{4} =$

Ⓔ $4\frac{1}{3} + 2\frac{3}{4} =$

3 Subtract using the following number line:

$3\frac{1}{5} - 1\frac{1}{4} =$



Lesson 4&5

- 1 Evaluate** each sum or difference using any strategy you prefer, and then evaluate. (Simplify, if possible)

a $3\frac{4}{5} + 2\frac{2}{3} =$

b $4\frac{3}{4} + 9\frac{5}{12} =$

c $2\frac{1}{4} + 1\frac{11}{16} =$

d $5\frac{7}{10} + 8\frac{3}{4} =$

e $1\frac{2}{3} + 1\frac{15}{24} =$

f $4\frac{1}{4} - 2\frac{5}{6} =$

g $9\frac{1}{6} - 3\frac{1}{3} =$

h $1\frac{2}{3} - 1\frac{3}{5} =$

i $9\frac{1}{10} - 5\frac{7}{12} =$

j $5\frac{1}{3} - 2\frac{4}{5} =$

2 Find the missing number using any **strategy**. Simplify, if possible:

a $9\frac{5}{20} - a = 4\frac{19}{20} \rightarrow a =$

b $b - 4\frac{7}{8} = 4\frac{37}{40} \rightarrow b =$

c $15\frac{1}{4} - c = 8\frac{5}{8} \rightarrow c =$

d $d - 3\frac{1}{3} = 2\frac{1}{6} \rightarrow d =$

e $e + 9\frac{1}{4} = 12\frac{15}{16} \rightarrow e =$

f $4\frac{12}{18} + f = 11 \rightarrow f =$

g $g + 3\frac{1}{5} = 6\frac{1}{2} \rightarrow g =$

h $5\frac{2}{3} + h = 9\frac{3}{4} \rightarrow h =$

3 Complete:

a $2\frac{3}{8} + 1\frac{3}{4} =$ $\quad + \quad =$ $\quad + 2\frac{6}{8}$

b $5\frac{5}{6} + 1\frac{1}{3} =$ $\quad + \quad =$ $\quad + 1\frac{2}{6}$

c $4\frac{7}{8} + 2\frac{1}{2} =$ $\quad + \quad = 4\frac{7}{8} + 1\frac{1}{4}$

d $3\frac{1}{2} + 1\frac{8}{9} =$ $\quad + \quad =$ $\quad + \quad =$

Fractions, Decimals, and Proportional Relationships

$$\textcircled{4} 4 \frac{7}{10} + 2 \frac{9}{16} = 4 \frac{56}{80} + 2 \frac{45}{80} = (\quad + \quad) (\quad + \quad)$$

$$= \quad - \quad =$$

$$\textcircled{5} 5 \frac{1}{3} - 1 \frac{5}{6} = \quad - \quad = (\quad + \quad) - (\quad + \quad)$$

$$= \quad - \quad =$$

$$\textcircled{6} 6 \frac{1}{4} - 3 \frac{1}{2} = \quad - \quad = (\quad + \quad) - (\quad + \quad)$$

$$= \quad - \quad =$$

$$\textcircled{7} 8 \frac{3}{5} - 2 \frac{3}{5} = (\quad + \quad) - (\quad + \quad)$$

$$= \quad - \quad =$$

4 Complete:

$$\textcircled{1} 1 \frac{3}{5} + 2 \frac{2}{3} = 1 \frac{4}{15} + \underline{\hspace{2cm}}$$

$$\textcircled{2} 3 \frac{5}{8} + 2 \frac{1}{2} = 4 + \underline{\hspace{2cm}}$$

$$\textcircled{3} 1 \frac{3}{4} + 2 \frac{1}{2} = 5 - \underline{\hspace{2cm}}$$

$$\textcircled{4} \quad - 3 = 1 \frac{1}{4} + 2 \frac{1}{3}$$

$$\textcircled{5} 5 \frac{3}{4} - \underline{\hspace{2cm}} = 2 \frac{1}{8} + 1 \frac{1}{2}$$

5 Wael collected $4 \frac{3}{4}$ kilograms of dates. He gave $2 \frac{1}{5}$ kg to his friend. He wants to know how many kilograms are left.

6 Asmaa bought a book for $9 \frac{3}{4}$ pounds and a pen for $2 \frac{1}{2}$ pounds. How much money did Asmaa pay?

Assessment

Unit 8

1 Choose the correct answer:

a $\frac{3}{5} + \frac{9}{10} = \quad + 1$

b $1\frac{4}{5} + 2\frac{1}{3} =$

c $3\frac{1}{2} - \quad = 1\frac{3}{8}$

d $3\frac{5}{4} =$

e $3\frac{5}{6} + 1\frac{1}{3} = 4 +$

($\frac{1}{10}$ or $\frac{1}{2}$ or $\frac{1}{5}$ or $\frac{2}{5}$)

($4\frac{2}{15}$ or $3\frac{2}{15}$ or $4\frac{5}{8}$ or $3\frac{5}{8}$)

($2\frac{5}{8}$ or $1\frac{1}{8}$ or $1\frac{5}{8}$ or $2\frac{1}{8}$)

($1\frac{15}{4}$ or $2\frac{7}{4}$ or $4\frac{1}{4}$ or $\frac{15}{4}$)

(2 or $1\frac{1}{6}$ or $1\frac{2}{6}$ or $1\frac{2}{3}$)

2 Complete:

a $-1\frac{2}{3} = 2\frac{1}{2}$

b $\frac{15}{7} = 1\frac{\quad}{7}$

c $2\frac{1}{2} - 1\frac{7}{8} = \quad - 2$

d $\frac{15}{20} = \frac{\quad}{4}$

e $2\frac{1}{3} + 1\frac{1}{4} = 3 + \frac{\quad}{4} = 12 \div 12 =$

3 Answer the following:

a Hana had $1\frac{1}{2}$ pounds. she bought a ruler for $4\frac{1}{4}$ pounds and a pen for $5\frac{1}{2}$ pounds. What is the remaining amount with Hana?

b Rewrite the mixed number $4\frac{3}{5}$ in four different ways

$4\frac{3}{5} = \quad = \quad = \quad =$

LESSON

6

Story Problems with Mixed Numbers

1 Complete

a $2\frac{1}{4}$ minutes = (X) + = seconds.

b $3\frac{1}{10}$ hours = (X) + = minutes.

c $4\frac{2}{3}$ years = (X) + = months.

d 5 minutes + 40 seconds = minutes.

e 4 hours + 15 minutes = hours.

f 3 years + 3 months = years.

g $1\frac{3}{4}$ minutes = seconds h 150 seconds = minutes

i $2\frac{1}{3}$ hours = minutes. j 90 minutes = hours

k $2\frac{1}{4}$ years = months. l 30 months = years.

- 2 Habiba is planting **three** plume thistle plants. It took her $\frac{5}{6}$ minute to plant the first one. The second plant took $\frac{1}{12}$ minute longer to plant than the first one. The third plant took $\frac{1}{12}$ less time to plant than the second one. How long did it take to plant the third plume thistle?

- 3 Ola baked 4 identical basbousa pans for a celebration. Knowing that some guests like basbousa more than others, she cut each basbousa differently. When the celebration was over, she noticed there was some basbousa left in each pan. There was $\frac{1}{3}$ left in one pan, and $\frac{1}{6}$ remained in another. Another pan had $\frac{5}{12}$ remaining, and $\frac{1}{4}$ was uneaten.

- Ⓐ What is the total amount of basbousa left?
- Ⓑ How much basbousa was eaten at the celebration?
- Ⓒ Which of the four pans had the least basbousa left?
- Ⓓ Ola wants to put the remaining basbousa in one pan. Will it fit? Why or why not?

- 4 On Monday, Afaf spent $5\frac{2}{3}$ hours researching papyrus plants for her presentation. The next day, she spent $\frac{11}{12}$ of an hour less putting her presentation together. Over both days, how many hours did Afaf spend on her presentation?

- 5 Write a story problem that is reasonable for this pair of mixed numbers. Then, solve your problem.

$$3\frac{1}{8} + 2\frac{1}{3}$$

Assessment on Lesson 16

Unit 8

1 Complete the following.

☒ a $3\frac{1}{2}$ hours = _____ minutes.

☒ b 18 months = _____ years.

☒ c $\frac{45}{60}$ = _____ (In the simplest form)

☒ d $3\frac{7}{5}$ = 5

☒ e $5\frac{3}{8}$ = 4 $\frac{\quad}{8}$

2 Choose the correct answer:

☒ a 2 hours and a half = _____ minutes. (150 ☒ or 140 ☐ or 135 ☐ or 120)

☒ b A year and a fourth = _____ months. (12 ☒ or 16 ☐ or 15 ☐ or 12)

☒ c $\frac{24}{5}$ = _____ (4 $\frac{2}{5}$ ☒ or 3 $\frac{9}{5}$ ☐ or 2 $\frac{4}{5}$ ☐ or 1 $\frac{9}{5}$)

☒ d $4\frac{8}{9} \div \frac{1}{3}$ = _____ $\div \frac{2}{9}$ (5 $\frac{2}{3}$ ☒ or 5 ☐ or 4 ☐ or 3)

☒ e $3\frac{1}{2} - 2\frac{3}{4}$ = _____ (1 $\frac{3}{4}$ ☒ or $\frac{3}{4}$ ☐ or 6 $\frac{1}{4}$ ☐ or 5 $\frac{1}{4}$)

3 Answer the following:

Jalal spends $2\frac{1}{4}$ hours studying Arabic and 5 minutes more studying mathematics. How much time does Jalal spend studying mathematics and Arabic?

Assessment on Concept 2



First: Complete the following.

- 1 The addition problem representing the opposite model is

$$\frac{3}{4} + \quad =$$

- 2 The subtraction problem represented on the opposite number line is

$$- \quad =$$

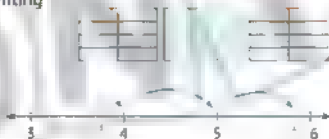
3 $2\frac{3}{8} - 1\frac{3}{4} =$

$$- 2$$

4 $2\frac{8}{9} +$

$$= 5\frac{1}{3}$$

5 $3\frac{1}{6}$ hours = minutes.



Second: Find the result.

1 $2\frac{4}{5} + 3\frac{1}{2} =$

2 $7\frac{3}{4} - 3\frac{1}{3} =$

3 $4\frac{1}{2} - 2\frac{5}{6} =$

Third: Answer the following.

- Ahmed runs for $3\frac{1}{4}$ hours a day, and Heba runs for 45 minutes less than Ahmed. What is the total time they both spent running?
Find the time in hours, then in minutes.

Assessment 1 on



First: Choose the correct answer.

$$1 \quad 8 \frac{3}{4} - 2 \frac{1}{4} =$$

$$(7 \frac{1}{4} \text{ or } 7 \text{ or } 6 \frac{3}{4} \text{ or } 6 \frac{1}{2})$$

$$2 \quad 3 \frac{1}{2} = 3 \frac{\quad}{8}$$

$$(4 \text{ or } 7 \text{ or } 28 \text{ or } 2)$$

$$3 \quad 5 \frac{13}{7} =$$

$$(3 \frac{20}{7} \text{ or } 4 \frac{18}{7} \text{ or } 6 \frac{6}{7} \text{ or } 6 \frac{3}{7})$$

$$4 \quad 5 \frac{3}{5} - 1 \frac{3}{4} =$$

- 2

$$(4 \frac{7}{20} \text{ or } 4 \frac{3}{5} \text{ or } 5 \frac{2}{5} \text{ or } 5 \frac{17}{20})$$

$$130 \text{ minutes} =$$

hours

$$(2 \frac{1}{6} \text{ or } 2 \frac{1}{2} \text{ or } 2 \frac{1}{4} \text{ or } 2 \frac{1}{3})$$

Second: Complete the following:

$$1 \quad 2 \text{ minutes and half} = \quad \text{seconds.}$$

$$1 \text{ month} = \quad \text{year.}$$

$$3 \quad \frac{13}{5} = 1 \frac{\quad}{\quad} = 2 \frac{\quad}{\quad}$$

$$+ 5 \frac{3}{4} + \quad = 7 \frac{1}{6}$$

$$3 \frac{1}{2} + 1 \frac{1}{3} = \quad + \quad = \quad + \quad = \quad = \quad$$

Third: Answer the following:

- Hala spends 5 hours in the club, $2 \frac{1}{2}$ hours in swimming practice, $1 \frac{1}{3}$ hours in running practice, and she takes a break between both practices. How long does Hala spend resting in hours and minutes?

Assessment 2 on



First: Complete the following:

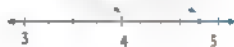
$$\frac{15}{4} = 2 \frac{\quad}{4}$$

$$< 2 \frac{3}{8} - \quad = \frac{7}{8}$$

3 $2 \frac{1}{3}$ and $8 \frac{3}{4}$ using the smallest like denominator are .

$$2 \frac{3}{4} + 1 \frac{1}{2} = \quad - 5 \frac{3}{4}$$

The subtraction problem represented on the opposite number line is $\quad - \quad = \quad$



Second: Choose the correct answer:

1 A year and 3 months = \quad years. ($1 \frac{1}{12}$ or $1 \frac{1}{2}$ or $1 \frac{1}{3}$ or $1 \frac{1}{4}$)

2 $3 \frac{4}{6}$ and $2 \frac{2}{4}$ using the smallest like denominator are .

$$(3 \frac{4}{6} + 2 \frac{2}{6} \text{ or } 3 \frac{4}{6} + 2 \frac{3}{6} \text{ or } 3 \frac{3}{4} + 2 \frac{2}{4} \text{ or } 3 \frac{2}{3} + 2 \frac{1}{2})$$

3 $3 - 1 \frac{1}{2} = 2 \frac{3}{4}$. ($\frac{3}{4}$ or $\frac{1}{4}$ or $1 \frac{1}{2}$ or $1 \frac{1}{4}$)

4 $5 \frac{7}{9} = 4 \frac{\quad}{9}$. (52 or 25 or 16 or 7)

Third Answer the following:

- Ahmed has three children. The middle child is $4 \frac{1}{2}$ years old, the eldest is $1 \frac{1}{3}$ years older than the middle child and the youngest is $1 \frac{1}{4}$ years younger than the middle child. What is the sum of the ages of the three children?

Concept 9.1 Multiplying Fractions and Mixed Numbers

Lesson 1

1 Find the product. Simplify your answers, if possible

a $\frac{3}{4} \times 5 =$

b $\frac{2}{7} \times 3 =$

c $\frac{2}{3} \times 9 =$

d $\frac{5}{6} \times 2 =$

e $\frac{3}{4} \times 6 =$

f $\frac{5}{8} \times 4 =$

g $1\frac{1}{2} \times 3 =$

=

h $2\frac{1}{4} \times 4 =$

=

i $3\frac{4}{5} \times 5 =$

=

j $2\frac{1}{3} \times 8 =$

=

k $8\frac{1}{2} \times 4 =$

=




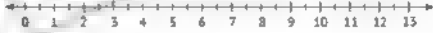

l $4\frac{3}{5} \times 10 =$

=

2 Complete and simplify your answers, if possible:

- a $3 \times \frac{3}{4} =$ $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} =$
- b $\frac{1}{2} \times \frac{1}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$
- c $\frac{5}{8} \times 5 =$ $\frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} =$
- d $1 \frac{3}{4} \times 4 =$ $1 + \frac{3}{4} + 1 + \frac{3}{4} + 1 + \frac{3}{4} + 1 + \frac{3}{4} =$
- e $1 \frac{3}{5} \times 5 = 1 \frac{3}{5} + 1 \frac{3}{5} + 1 \frac{3}{5} + 1 \frac{3}{5} + 1 \frac{3}{5} =$
- f $4 \frac{3}{4} \times 3 =$ $4 + \frac{3}{4} + 4 + \frac{3}{4} + 4 + \frac{3}{4} =$

3 Using the number lines shown, then find the product.

- a $\frac{2}{3} \times 4 =$ 
- b $\frac{3}{5} \times 3 =$ 
- c $4 \times 1 \frac{1}{4} =$ 
- d $2 \frac{1}{2} \times 5 =$ 
- e $3 \frac{2}{3} \times 2 =$ 

4 Using the **models** shown, find the product:

a
 $\frac{3}{4} \times 3 =$

b
 $4 \times \frac{4}{5} =$

c
 $\frac{1}{2} \times 5 =$

d
 $4 \times \frac{2}{3} =$

e $1\frac{3}{5} \times 3 =$

f $2\frac{3}{4} \times 4 =$

5 Write two different multiplication expressions that have the same product

a $4 \times \frac{5}{6} =$ \times $=$ \times

b $\frac{3}{7} \times 4 =$ \times $=$ \times

c $\frac{4}{5} \times 6 =$ \times $=$ \times

d $\frac{8}{9} \times 6 =$ \times $=$ \times

e $\frac{5}{3} \times 8 =$ \times $=$ \times

6 Complete the input-output tables. Simplify your answers, if possible:

① Rule ($\times \frac{9}{10}$)

	Input	Output
a	2	
b	4	
c	6	
d	8	

② Rule ($\times 10\frac{1}{4}$)

	Input	Output
e	2	
f	3	
g	4	
h	5	

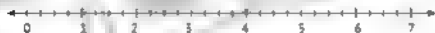
③ Rule ($\times 2\frac{1}{5}$)

	Input	Output
i	3	
j	5	
k	7	
l	9	

7 Alaa saves $1\frac{3}{4}$ pounds from her pocket money every day for 4 days. What is the total amount that Alaa saves? Use the strategies shown.

a Use Repeated Addition.

b Draw a Number Line



c Convert pounds into piasters to solve, then write the answer in pounds

$1\frac{3}{4}$ LE =

PT

X

=

PT =

LE

Assessment

on Lesson 1

1 Choose the correct answer:

☐ $\frac{3}{4} \times 6 =$ $\times 3$

☐ $\frac{5}{6} \times 9 =$

☐ $2\frac{3}{4} +$ $= 5\frac{1}{3}$

☐ $2\frac{7}{4} = 3$

☐ $\frac{48}{64} =$ (In the simplest form)

☐ $(\frac{3}{4} \text{ or } \frac{2}{3} \text{ or } \frac{3}{2} \text{ or } \frac{6}{9})$

☐ $(6\frac{5}{9} \text{ or } 9\frac{5}{6} \text{ or } 7\frac{5}{6} \text{ or } 7\frac{1}{2})$

☐ $(2\frac{7}{12} \text{ or } 3\frac{7}{12} \text{ or } 2\frac{1}{2} \text{ or } 3\frac{2}{3})$

☐ $(\frac{19}{4} \text{ or } \frac{15}{4} \text{ or } \frac{11}{4} \text{ or } \frac{3}{4})$

☐ $(\frac{3}{4} \text{ or } \frac{6}{8} \text{ or } \frac{12}{16} \text{ or } \frac{24}{32})$

2 Complete the following:

☐ $2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} + 2\frac{1}{5} =$ \times $=$

☐ The multiplication problem representing the opposite number line is.



☐ $\frac{5}{8} \times 4 =$

☐ $2\frac{1}{4} \times 6 =$

3 Answer the following:

Ahmed studies for $3\frac{1}{4}$ hours every day. How many hours does Ahmed study in 4 days?

Find the answer by converting the hours into minutes, and then convert the answer into hours again.

Lessons 2&3

1 Use an area model to multiply. Simplify your answers, if possible:

a $\frac{1}{2} \times \frac{1}{3} =$

b $\frac{2}{3} \times \frac{3}{4} =$

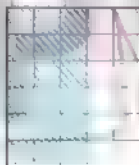
c $\frac{1}{2} \times \frac{3}{4} =$

d $\frac{2}{3} \times \frac{2}{3} =$

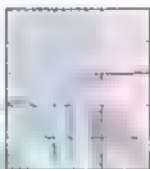
2 Write the multiplication problem represented by each of the following models, and find the result. Simplify your answers, if possible.



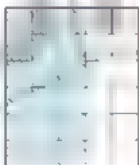
a $\times =$



a $\times =$



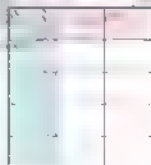
b $\times =$



b $\times =$



c $\times =$



c $\times =$

3 Write the product of each multiplication problem that represented by each of the following models

a



b



c



d



4 Multiply, then simplify your answers, if possible:

Ⓐ $\frac{3}{8} \times 4 =$

Ⓒ $\frac{5}{9} \times 6 =$

Ⓑ $\frac{12}{15} \times 5 =$

Ⓓ $\frac{3}{16} \times 8 =$

Ⓒ $\frac{7}{8} \times \frac{6}{7} =$

Ⓕ $\frac{5}{9} \times 3 =$

Ⓔ $8 \times \frac{5}{6} =$

Ⓗ $\frac{3}{4} \times 6 =$

Ⓘ $\frac{1}{3} \times 1\frac{1}{2} =$

Ⓖ $\frac{4}{5} \times 4\frac{1}{6} =$

Ⓚ $\frac{1}{3} \times \frac{3}{5} =$

Ⓙ $\frac{3}{4} \times \frac{8}{9} =$

Ⓛ $\frac{1}{2} \times \frac{2}{5} =$

Ⓜ $\frac{3}{4} \times \frac{2}{3} =$

Ⓝ $\frac{1}{4} \times \frac{2}{5} =$

Ⓟ $\frac{1}{3} \times \frac{1}{6} =$

5 Complete:

$$\textcircled{a} \frac{3}{8} \times \frac{4}{9} = \frac{1}{2} \times \frac{1}{3}$$

$$\textcircled{b} \frac{2}{5} \times \frac{3}{5} = \frac{2}{3} \times \frac{1}{5}$$

$$\textcircled{c} \frac{3}{4} \times \frac{1}{2} = \frac{3}{12} =$$

$$\textcircled{d} 3 \frac{2}{3} \times \frac{1}{2} = 3 \times \frac{5}{2}$$

6 Choose the correct answer:

$$\textcircled{a} \frac{5}{8} \times \frac{4}{15} = \frac{1}{2} \times$$

$$\left(\frac{2}{3} \text{ or } \frac{1}{15} \text{ or } \frac{3}{4} \text{ or } \frac{1}{3} \right)$$

$$\textcircled{b} \frac{1}{9} \times \frac{5}{3} = \frac{1}{3} \times \frac{1}{3}$$

$$\left(\frac{3}{5} \text{ or } \frac{3}{15} \text{ or } \frac{2}{10} \text{ or } \frac{1}{15} \right)$$

$$\textcircled{c} \frac{3}{5} \times \frac{2}{3} = 5$$

$$\left(3 \text{ or } 2 \text{ or } 6 \text{ or } 15 \right)$$

$$\textcircled{d} \frac{8}{9} \times \frac{1}{6} = \frac{4}{9}$$

$$\left(8 \text{ or } 1 \text{ or } 3 \text{ or } 4 \right)$$

$$\textcircled{e} \frac{15}{20} \times \frac{4}{5} =$$

$$\left(\frac{4}{25} \text{ or } \frac{1}{2} \text{ or } \frac{5}{4} \text{ or } \frac{3}{5} \right)$$

Assessment

on Lessons 2&3

1 Complete the following:

☐ $\frac{2}{3} \times \frac{3}{2} =$

☒ $\frac{4}{5} \times \frac{5}{4} = \frac{2}{5}$

☐ $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} =$

☐ $\frac{5}{6} \times \frac{6}{5} = \frac{45}{54}$

☐ $\frac{3}{4} \times \frac{4}{3} = \frac{3}{8}$

$\times =$

2 Choose the correct answer:

☐ $\frac{5}{8} \times \frac{4}{5} =$

☐ $\frac{45}{60} =$

☐ $\frac{3}{4} \times \frac{4}{3} = \frac{3}{8}$

☐ $5 \times \frac{3}{5} =$

☐ $\frac{15}{25} =$

(☐ 2 ☐ or ☐ $\frac{1}{2}$ ☐ or ☐ $\frac{5}{40}$ ☐ or ☐ $\frac{20}{8}$)

(☐ $\frac{3}{4}$ ☐ or ☐ $\frac{9}{12}$ ☐ or ☐ $\frac{15}{20}$ ☐ or ☐ $\frac{6}{8}$)

(☐ $\frac{1}{4}$ ☐ or ☐ $\frac{2}{2}$ ☐ or ☐ $1 \frac{1}{2}$ ☐ or ☐ $\frac{1}{2}$)

(☐ $\frac{5}{3}$ ☐ or ☐ 6 ☐ or ☐ 3 ☐ or ☐ $\frac{3}{25}$)

(☐ $\frac{2}{3}$ ☐ or ☐ $\frac{2}{5}$ ☐ or ☐ $\frac{6}{10}$ ☐ or ☐ $\frac{1}{2}$)

3 Answer the following :

- ☐ Write the multiplication problem represented by the following models, and find the result. Simplify your answer, if possible

- ☐ Use the following area model to multiply



$\times =$



$\frac{4}{5} \times \frac{1}{4} =$

Lessons 4&5

1 Multiply, then simplify your answers, if possible:

$$\textcircled{a} \frac{3}{8} \times \frac{4}{9} =$$

$$\textcircled{c} \frac{5}{9} \times \frac{6}{7} =$$

$$\textcircled{b} \frac{12}{15} \times \frac{5}{8} =$$

$$\textcircled{d} \frac{3}{16} \times \frac{8}{9} =$$

$$\textcircled{e} \frac{7}{8} \times \frac{6}{7} =$$

$$\textcircled{f} \frac{5}{9} \times \frac{3}{10} =$$

$$\textcircled{g} 8 \times \frac{5}{6} =$$

$$\textcircled{h} \frac{3}{4} \times 6 =$$

$$\textcircled{i} 1\frac{1}{3} \times 1\frac{1}{2} =$$

$$\textcircled{j} 4\frac{4}{5} \times 4\frac{1}{6} =$$

$$\textcircled{k} 3\frac{1}{3} \times 3\frac{3}{5} =$$

$$\textcircled{l} 3\frac{3}{4} \times 8 =$$

$$\textcircled{m} 2\frac{1}{2} \times 1\frac{1}{5} =$$

$$\textcircled{n} 3\frac{3}{4} \times 1\frac{3}{5} =$$

$$\textcircled{o} 2\frac{1}{4} \times 5\frac{1}{3} =$$

$$\textcircled{p} 1\frac{1}{3} \times 1\frac{1}{6} =$$

$$\textcircled{q} 2\frac{5}{7} \times 3\frac{1}{2} =$$

2 Complete:

a $\frac{3}{8} \times \frac{2}{9} = \frac{1}{4} \times \frac{3}{9}$

b $4 \times \frac{5}{12} = \frac{1}{7} \times \frac{5}{7}$

c $\frac{3}{4} \times \frac{5}{7} = \frac{3}{4} \times \frac{15}{7}$

d $3\frac{2}{3} \times \frac{5}{2} = 3 \times \frac{5}{2}$

e $\frac{2}{5} \times 1\frac{1}{2} = \frac{2}{5} \times \frac{3}{2}$

f $\frac{15}{9} \times \frac{12}{5} = \frac{15}{9} \times \frac{12}{5}$

3 Choose the correct answer:

a $\frac{5}{8} \times \frac{4}{15} = \frac{1}{2} \times \frac{1}{3}$

($\frac{2}{3}$ or $\frac{1}{15}$ or $\frac{3}{4}$ or $\frac{1}{3}$)

b $\frac{3}{5} \times \frac{5}{9} = \frac{1}{3} \times \frac{1}{3}$

($\frac{3}{5}$ or $\frac{3}{15}$ or $\frac{2}{10}$ or $\frac{1}{15}$)

c $2\frac{2}{5} \times 4\frac{1}{6} = \frac{10}{5} \times \frac{25}{6}$

($\frac{2}{5}$ or 10 or $\frac{5}{2}$ or 2)

d $3\frac{4}{7} \times \frac{12}{5} = \frac{25}{7} \times \frac{12}{5}$

($1\frac{2}{5}$ or $2\frac{1}{5}$ or $2\frac{2}{5}$ or $5\frac{1}{2}$)

e $\frac{15}{20} \times \frac{4}{5} = \frac{3}{5} \times \frac{4}{5}$

($\frac{4}{25}$ or $\frac{1}{2}$ or $\frac{5}{4}$ or $\frac{3}{5}$)

Assessment

on Lessons 4&5

1 Choose the correct answer.

☐ A $3 \times \frac{4}{5} = 2 \times$

($\frac{2}{5}$ or $2\frac{2}{5}$ or $\frac{5}{5}$ or $\frac{6}{5}$)

☐ B $\frac{4}{15} \times \frac{5}{8} =$ $\times \frac{1}{2}$

($\frac{1}{3}$ or $\frac{4}{3}$ or $\frac{1}{15}$ or $\frac{1}{6}$)

☐ C $7 \times \frac{15}{4} =$ ($7 \times \frac{6}{4}$ or $7 \times 3\frac{3}{4}$ or $3 \times 7\frac{3}{4}$ or $14 \times 3\frac{3}{4}$)

☐ D $\frac{12}{15} = 4$ (3 or 12 or 15 or 5)

2 Complete the following:

☐ A $\frac{5}{8} \times \frac{2}{5} =$

☐ B $1\frac{3}{5} \times \frac{3}{4} =$

☐ C $\frac{5}{8} \times \frac{3}{4} =$

☐ D $\frac{2}{3} \times = \frac{10}{9}$

☐ E $3\frac{5}{7} = 7$

3 Use the following area models to multiply. Simplify your answers,

if possible:



☐ A $\frac{2}{3} \times \frac{1}{2} =$



☐ B $4 \times \frac{3}{5} =$

Lesson

6

1 Hazem purchased $5\frac{1}{2}$ kilograms of oranges. One kilogram costs $3\frac{1}{4}$ pounds. How much money did Hazem pay?

2 The price of one pen is $4\frac{3}{4}$ pounds. How much are 8 pens?

3 The school building consists of 5 floors, the height of each floor is $3\frac{3}{4}$ meters. How high is the school?

4 Hana had $10\frac{3}{4}$ pounds. She bought $3\frac{1}{2}$ kg of tomatoes. A kilogram costs $2\frac{1}{2}$ pounds. How much money is left with her?

5 Saleh trains to run for 4 hours and 15 minutes every day. How much time does he train in 5 days? Answer using fractions.

- 6 Hana bought three types of fabric. She has $2\frac{1}{2}$ meters of each type to make a quilt. If she used $5\frac{1}{4}$ meters to make a quilt, how long is the remaining fabric?

- 7 Salah bought $3\frac{1}{2}$ kg of oranges, the price of a kilogram is $4\frac{1}{4}$ pounds, and $2\frac{3}{4}$ kg of apples, the price of a kilogram is $8\frac{1}{2}$.
How much money did Salah pay for the fruits?

- 8 Write a story multiplication problem using $2\frac{2}{3}$ and $1\frac{4}{5}$.
Put the result in the simplest form.

- 9 Write a story multiplication problem using $1\frac{1}{5}$ and $5\frac{3}{4}$.
Put the result in the simplest form.

Assessment

on Lesson 6

1 Choose the correct answer:

Ⓐ $\frac{3}{8} \times \frac{4}{9} =$

($\frac{1}{3}$ or $\frac{2}{6}$ or $\frac{1}{6}$ or $\frac{2}{5}$)

Ⓑ $8 \times \frac{3}{5} =$

($2 \times \frac{6}{5}$ or $4 \times \frac{6}{5}$ or $6 \times \frac{5}{4}$ or $3 \times \frac{5}{8}$)

Ⓒ $1 \frac{3}{4} +$ $= 2 \frac{1}{2}$

($3 \frac{1}{4}$ or $4 \frac{1}{4}$ or $1 \frac{3}{4}$ or $\frac{3}{4}$)

Ⓓ 1 hours and 15 minutes =

hours ($2 \frac{1}{4}$ or $2 \frac{1}{3}$ or $2 \frac{1}{2}$ or $2 \frac{3}{4}$)

Ⓔ $\frac{3}{5} \times \frac{15}{18} =$

(2 or $\frac{1}{2}$ or 18 or $\frac{3}{5}$)

2 Complete the following:

Ⓐ $\frac{15}{35} = \frac{3}{\quad}$

Ⓑ $4 \frac{3}{5} = 2 \frac{\quad}{5}$

Ⓒ $\frac{2}{3} \times \frac{3}{2} =$

Ⓓ $3 \frac{3}{4} \times 2 \frac{4}{5} =$

Ⓔ $4 \frac{3}{8} - 2 \frac{1}{2} =$

3 Answer the following:

Saif trains at the club three days a week. He spends 2 hours and 30 minutes playing tennis and an hour and a quarter swimming. How much time does Saif spend at the club per week?

Answer using fractions.

Assessment on Concept 1



First: Choose the correct answer:

1 $5 \times \frac{4}{7} =$

(2 $\times \frac{10}{7}$ or 3 $\times \frac{3}{7}$ or 6 $\times \frac{3}{7}$ or 20 $\times 7$)

2 $\frac{3}{7} \times \frac{7}{3} =$

(1 or 21 or 9 or 49)

3 $\frac{3}{8} \times \frac{4}{9} =$

($\frac{1}{2} \times \frac{2}{3}$ or $\frac{3}{2} \times \frac{2}{3}$ or $\frac{1}{2} \times \frac{1}{3}$ or $\frac{3}{2} \times \frac{1}{3}$)

4 $\frac{2}{3} \times \frac{18}{6} =$

($\frac{1}{3}$ or $\frac{3}{6}$ or $\frac{1}{2}$ or 2)

Second: Complete the following. Simplify your answers, if possible:

1 $3 \frac{1}{2} \times \frac{6}{7} =$

2 $4 \frac{4}{5} \times 1 \frac{1}{9} =$

3 $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} =$ \times $=$

Third: Answer the following:

Write the multiplication problem represented by each of the following models, and find the result. Simplify your answers, if possible.



8 Sameh needs $2 \frac{1}{2}$ hours to make a pie.

How long does he need to make 3 pies?

Concept 9.2

Dividing Whole Numbers and Unit Fractions

Lesson 7

1 Match each situation with the division express on that represents it.

- | | | | |
|---------------------|---|----------------------------------------------|----------|
| a $3 \div 2$ | • | 2 bales of cotton shared by 3 manufacturers. | 1 |
| b $2 \div 3$ | • | 3 bales of cotton shared by 2 manufacturers. | 2 |
| c $2 \div 5$ | • | 5 bales of cotton shared by 2 manufacturers. | 3 |
| d $5 \div 2$ | • | 3 bales of cotton shared by 5 manufacturers. | 4 |
| e $3 \div 5$ | • | 2 bales of cotton shared by 5 manufacturers. | 5 |

2 Using the models shown, find the quotient as a fraction or mixed number. Simplify your answers, if possible:

a $6 \div 4 =$

b $5 \div 3 =$

c $4 \div 5 =$

d $3 \div 2 =$

e $3 \div 4 =$

f $6 \div 3 =$

g $3 \div 3 =$

- 3 Write the division problem represented by each model of the following, then find the quotient:

Ⓐ

□ ÷ □ = □

Ⓑ

□ ÷ □ = □

Ⓒ

□ ÷ □ = □

- 4 Complete the following table:

Expression	Quotient	Standard Division Algorithm	Expression	Quotient	Standard Division Algorithm
Ⓐ $8 \div 3$	$\frac{8}{3} =$	$3 \overline{) 8}$	Ⓓ $8 \div 5$		
Ⓑ $9 \div 4$			Ⓔ $9 \div 3$		
Ⓒ $4 \div 3$			Ⓕ $5 \div 4$		

Assessment

on Lesson 7

1 Choose the correct answer:

☐ $\frac{24}{48} =$

($\frac{4}{8}$ or $\frac{8}{16}$ or $\frac{2}{4}$ or $\frac{1}{2}$)

☐ $\frac{3}{8} \times \frac{2}{3} =$

($\frac{1}{2} \times \frac{1}{2}$ or $\frac{1}{2} \times \frac{1}{3}$ or $\frac{1}{4} \times \frac{1}{2}$ or $\frac{3}{4} \times \frac{2}{3}$)

☐ $8 \div 5 =$

($8 \frac{3}{5}$ or $5 \frac{3}{8}$ or $1 \frac{3}{5}$ or $\frac{5}{8}$)

☐ $45 \div 60 =$

($1 \frac{15}{60}$ or $\frac{3}{4}$ or $4 \frac{5}{6}$ or $1 \frac{1}{3}$)

☐ $2 \frac{1}{3}$ is a/an

(proper fraction or improper fraction or mixed number or whole number)

2 Find the result:

☐ $3 \frac{3}{5} \div 1 \frac{1}{2} =$ _____

☐ $4 \frac{1}{3} - 2 \frac{3}{4} =$

☐ $3 \frac{1}{5} \times 1 \frac{7}{8} =$

☐ $5 \div 15 =$

3 Answer the following

Hussam has 2 liters of juice concentrate and 3 liters of water, he wants to mix them and put the mixture in 10 cups evenly

How much juice does he put in each cup?

lessons 8&9

1 Complete the following.

a $\frac{1}{2} \times 2 =$

b $\frac{1}{2} \times = 2$

c $\times 6 = 3$

d $\frac{1}{3} \times = 1$

e $\times 6 = 2$

f $\frac{1}{3} \times 9 =$

g $\frac{1}{4} \times = 1$

h $\frac{1}{4} \times = 2$

i $\frac{1}{4} \times = 3$

j $\frac{1}{5} \times = 2$

k $\frac{1}{6} \times = 3$

l $\times 8 = 1$

2 Using the models shown, find the quotient.

a $\frac{1}{2} \div 3 =$

b $\frac{1}{5} \div 2 =$

c $\frac{1}{3} \div 4 =$

d $3 \div \frac{1}{5} =$

e $2 \div \frac{1}{4} =$

f $5 \div \frac{1}{3} =$

3 Find the result. Simplify your answers, if possible:

a 1 $\frac{1}{4} \div 2 =$ X =

2 $\frac{1}{2} \cdot 4 =$ X =

3 $4 \div \frac{1}{2} =$ X =

4 $2 \div \frac{1}{4} =$ X =

5 $4 \div 2 =$

6 $2 \div 4 =$

b 1 $\frac{1}{5} \cdot 3 =$ X =

2 $\frac{1}{3} \div 5 =$ X =

3 $5 \div \frac{1}{3} =$ X =

4 $3 \div \frac{1}{5} =$ X =

5 $5 \div 3 =$

6 $3 \div 5 =$

c 1 $\frac{1}{9} \div 3 =$

2 $\frac{1}{3} \div 9 =$

3 $9 \div \frac{1}{3} =$

4 $3 \div \frac{1}{9} =$

5 $9 \div 3 =$

6 $3 \div 9 =$

d 1 $\frac{1}{6} \div 4 =$

2 $\frac{1}{4} \div 6 =$

3 $6 \div \frac{1}{4} =$

4 $4 \div \frac{1}{6} =$

5 $6 \div 4 =$

6 $4 \div 6 =$

4 Complete:

a $\frac{1}{5} \div = \frac{1}{30}$

b $\frac{1}{5} \times = \frac{1}{30}$

c $5 \div = 30$

d $5 \times = 30$

e $\frac{1}{8} \div = \frac{1}{24}$

f $\frac{1}{8} \times = \frac{1}{24}$

g $8 \div = 24$

h $8 \times = 24$

i $\div 7 = \frac{1}{14}$

j $\times \frac{1}{7} = \frac{1}{14}$

k $\div \frac{1}{7} = 14$

l $\times 7 = 14$

Assessment

on Lessons 8&9

1 Choose the correct answer:

- Ⓐ $3 \div 18 =$ ($\frac{1}{3} \div \frac{1}{2}$ or $\frac{1}{2} \div \frac{1}{3}$ or $\frac{1}{2} + 3$ or $3 \div \frac{1}{2}$)
 Ⓑ $5 \times \frac{8}{5} =$ ($\frac{1}{4} \times 2$ or $\frac{1}{2} \times 4$ or $\frac{1}{2} \times 2$ or $\frac{1}{2} \times \frac{1}{2}$)
 Ⓒ $5 \frac{1}{2} -$ $= 2 \frac{1}{4}$ ($3 \frac{1}{2}$ or $3 \frac{1}{4}$ or $2 \frac{1}{2}$ or $2 \frac{1}{4}$)
 Ⓓ $5 \times \frac{4}{7} = 10 \times$ ($\frac{39}{7}$ or $\frac{5}{7}$ or $\frac{4}{7}$ or $\frac{2}{7}$)
 Ⓔ $______ + \frac{1}{5} = 15$ ($\frac{1}{10}$ or 10 or 3 or $\frac{1}{3}$)

2 Find the result:

- Ⓐ $2 \frac{3}{6} + \frac{3}{4} =$
 Ⓑ $4 \frac{1}{3} - 2 \frac{1}{2} =$
 Ⓒ $5 \frac{1}{4} \times 1 \frac{1}{3} =$
 Ⓓ $5 + \frac{1}{2} =$
 Ⓔ $\frac{1}{4} \div 3 =$

3 Hazem wants to divide 3 pizzas among 4 of his friends.

Help Hazem and complete:

- Ⓐ Hazem divides each pizza into _____ pieces.
 Ⓑ Each friend gets _____ piece(s).

Lesson: 10

1 For each problem, identify which operation (addition, subtraction, multiplication, or division) should be used to model the situation described:

Ⓐ Gehad mixes $\frac{1}{2}$ liter of blue paint with $\frac{3}{8}$ liter of red paint to make a shade of purple paint. How many liters of purple paint does Gehad make?

Ⓑ Manal has $\frac{3}{2}$ hours to complete her schoolwork. She finishes her math homework in $\frac{5}{4}$ of an hour. How much time remains for the rest of her schoolwork?

Ⓒ Fatma feeds her cat $\frac{1}{8}$ of a kilogram of cat food each day.

1 How much cat food does she need to feed her cat for 6 days?

2 How many days will 4 kg of cat food last?

Ⓓ After Hoda's birthday party, $\frac{1}{4}$ of the food that remained Hoda gave $\frac{3}{2}$ of the remaining food to her aunt. What fraction of the total amount of food did her aunt receive?

Ⓔ Nader has 8 liters of fruit juice. If he drinks $\frac{3}{4}$ liter of juice each day, how many days will it take him to finish all the juice?

Ⓕ The factory's staff is $\frac{5}{8}$ female. How much of the staff is male?

2 Answer the following:

- Ⓐ A teacher wants to give $\frac{1}{8}$ of a box of pencils to each student.
She has 5 boxes of pencils.
To how many students will she be able to give pencils?
- Ⓑ Afaf and Adel pulled up weeds in $\frac{1}{4}$ of the garden's area.
If they divided the weeding equally, what total area of the garden did Afaf weed?
- Ⓒ A toddler eats $\frac{1}{3}$ of a piece of bread each day for breakfast.
If the loaf of bread contains 12 pieces, how many days of breakfast will the loaf of bread provide?
- Ⓓ A computer takes $\frac{1}{200}$ of a second to answer a math problem.
How many math problems can the computer answer in 120 seconds?
- Ⓔ A box of dry milk powder contains 15 servings.
The box of milk powder weighs $\frac{1}{2}$ of a kilogram.
What is the weight of each serving of dry milk powder?
- Ⓕ It takes Aya $\frac{1}{3}$ of an hour to model 4 identical clay figures.
How long does it take for Aya to model one clay figure?

Assessment

on Lesson 10

1 Find the result. Simplify your answers, if possible:

a $3\frac{2}{3} + 2\frac{1}{2} =$

b $7\frac{1}{4} - 2\frac{1}{3} =$

c $3\frac{1}{8} \times 1\frac{1}{5} =$

d $4 \div \frac{1}{3} =$

e $\frac{1}{4} \div 3 =$

2 Complete the following:

a $\frac{3}{5} \times \quad = 3$

b $\frac{1}{3} \div \quad = \frac{1}{15}$

c $5 \times \quad = \frac{1}{2}$

d $\quad \div \frac{1}{2} = 14$

e $\frac{36}{48} \times 6 \times 4$

3 Answer the following:

a Hana had 2 $\frac{1}{2}$ pounds, and her father gave her 3 $\frac{1}{2}$ pounds. She wants to buy pens that cost $\frac{1}{2}$ pounds each. How many pens can she buy?

b Salah wants to use 4 meters of fabric to make 6 dresses for his children. If he divides the fabric evenly, what is the length of fabric used in each dress?

Assessment on Concept 2



First. Choose the correct answer:

1 $12 \div 8 =$

($\frac{2}{3}$ or $1\frac{1}{2}$ or $\frac{8}{12}$ or $1\frac{4}{12}$)

2 $\frac{1}{2} \div 3 =$

($\frac{3}{2}$ or $\frac{2}{3}$ or $\frac{1}{6}$ or 6)

3 $5 \times \frac{1}{8} =$

($5 \div \frac{1}{8}$ or $5 \div 8$ or 5×8 or $8 \div 5$)

4 $7 \div 3 =$

($\frac{3}{7}$ or 21 or $2\frac{1}{3}$ or $3\frac{1}{2}$)

5 $5 \div 15 =$

(3 or $\frac{1}{3}$ or 75 or $5\frac{1}{5}$)

Second: Complete the following:

1 $\frac{1}{5} \div \frac{2}{10} = \frac{1}{10}$

2 $4 \div \frac{1}{4} = 16$

3 $\frac{1}{12} + \frac{1}{12} = \frac{1}{6}$

4 $\frac{1}{2} \div 8 = \frac{1}{16}$

5 $9 \div 1 = 9$

Third. Answer the following:

- Find the quotient and represent it on the model.

1 $5 \div 3 = 1\frac{2}{3}$

2 $2 \div \frac{1}{4} = 8$

3 $\frac{1}{2} \div 4 = \frac{1}{8}$

Fourth: Answer the following:

- Safa has $\frac{1}{2}$ liter of juice that she wants to divide **equally** among her **three** children. How much juice will each of them get?

Assessment 1 on



First: Choose the correct answer.

1. $\frac{3}{8} \times 12 = \frac{6}{8} \times$

(6 ☐ 4 ☐ 9 ☐ 3)

2. $\frac{3}{10} \times 15 =$

(2 $\frac{1}{4}$ ☐ 4 $\frac{1}{2}$ ☐ 4 $\frac{3}{5}$ ☐ 3 $\frac{4}{5}$)

3. $\frac{4}{5} \times 1 \frac{1}{2} =$

($\frac{4}{5} + \frac{4}{5}$ ☐ $\frac{2}{5} + \frac{2}{5}$ ☐ $\frac{4}{5} + \frac{2}{5}$ ☐ $\frac{5}{5} + \frac{2}{5}$)

4. $\frac{19}{4} \times \frac{7}{2} =$

(2 $\frac{3}{4} \times 4 \frac{1}{3}$ ☐ 4 $\frac{3}{4} \times 2 \frac{1}{3}$ ☐ 8 $\times \frac{1}{4}$ ☐ 6 $\times \frac{13}{12}$)

Second: Complete the following.

1. $6 \div 8 = \frac{\quad}{\quad}$ 2. $\frac{\quad}{\quad} \times 3 = \frac{3}{4}$

3. $5 \div \quad = 15$ 4. $\quad \times 8 = 2$ 5. $14 \div \quad = 14 \times 3$

Third: Write the problem represented by each of the following models, and find the result. Simplify your answers, if possible:

6. $\frac{\quad}{\quad} \div 4 =$

7. $\frac{\quad}{\quad} \times \frac{\quad}{\quad} =$

Fourth: Answer the following:

• Hossam saves $4 \frac{1}{2}$ pounds per week. How much does he save in 6 weeks?

Assessment 2 on



First: Complete the following:

$$1 \frac{4}{5} \times 3 = \frac{2}{5} \times$$

$$3 \frac{6}{7} \times 1 \frac{1}{6} = \quad \times \quad =$$

$$5 \frac{1}{3} \times 2 \frac{1}{4} = \quad \times \quad =$$

$$4 \frac{4}{9} \times 12 =$$

$$1 \frac{3}{5} \times \frac{7}{7} = 5$$

$$=$$

Second Choose the correct answer:

$$8 \div 12 =$$

$$\left(\frac{2}{3} \text{ or } 1 \frac{1}{2} \text{ or } \frac{3}{4} \text{ or } 1 \frac{1}{3} \right)$$

$$+ \frac{1}{4} = 16$$

$$\left(\frac{1}{4} \text{ or } 4 \text{ or } 2 \text{ or } 8 \right)$$

$$\frac{1}{3} \times \quad = 3$$

$$\left(3 \text{ or } 6 \text{ or } 9 \text{ or } 12 \right)$$

$$4 \quad 18 \div 8 =$$

$$\left(\frac{4}{9} \text{ or } 4 \frac{1}{4} \text{ or } 2 \frac{1}{4} \text{ or } 3 \right)$$

$$5 \quad 4 \times \frac{1}{3} =$$

$$\left(4 + 3 \text{ or } 4 \div \frac{1}{4} \text{ or } \frac{1}{4} \div \frac{1}{3} \text{ or } \frac{1}{4} \div 3 \right)$$

Third. Using the models shown find the result:

$$\textcircled{3} \quad \frac{1}{4} =$$

$$\textcircled{5} \quad \frac{1}{3} \times \frac{2}{3} =$$

Fourth: Answer the following:

- The distance from Ahmed's house to his school is 5 km, Ahmed wants to divide that distance into 4 equal parts. How long is each part?

Theme

4

Applications of Geometry
and Measurement



Theme Units

Unit 10 Two-Dimensional Figures and Coordinate Planes

Concept 10.1 Investigating Attributes of Shapes

Concept 10.2 Coordinate Planes

Unit 11 Volume

Concept 11.1 Understanding Volume and Capacity

Concept 11.2 Measuring Volume

Unit 12 Pie Charts and Applying Mathematical Learning

Concept 12.1 Understanding Pie Charts

Concept 10.1 Investigating Attributes of Shapes

Activity 1

1 Complete the following sentences:

- Ⓐ Quadrilaterals that contain two pairs of parallel sides are _____.
- Ⓑ Quadrilaterals that have four sides of equal length are _____.
- Ⓒ Quadrilaterals that have four right angles are _____.
- Ⓓ A parallelogram contains _____ of parallel sides, _____ of acute angles, and _____ of obtuse angles.
- Ⓔ A rectangle contains _____ of parallel sides, and _____ right angles.
- Ⓕ A rhombus contains _____ of parallel sides, _____ of acute angles, and _____ of obtuse angles.
- Ⓖ A square contains _____ of parallel sides, and _____ right angles.
- Ⓗ A kite contains _____ of congruent adjacent sides.
- Ⓘ A quadrilateral that has only one pair of parallel sides is a _____.
- Ⓢ A quadrilateral with two pairs of congruent adjacent sides is a _____.
- Ⓚ A quadrilateral that has two pairs of parallel sides and all of its angles are right angles is a _____.
- Ⓛ The quadrilateral that has two pairs of parallel sides, all its sides are equal, and its angles are right is a _____.

⑩ The quadrilateral that has one pair of acute angles, one pair of obtuse angles, two pairs of parallel sides, and all its sides are equal is a

⑪ The quadrilateral with two pairs of parallel sides is a

2 Choose the correct answer:

Ⓐ A _____ is a quadrilateral in which all of its sides are equal in length
(parallelogram Ⓐ rhombus Ⓐ rectangle Ⓐ trapezium)

Ⓑ A _____ is a quadrilateral in which all its angles are right angles.
(rectangle Ⓐ rhombus Ⓐ parallelogram Ⓐ trapezium)

Ⓒ A _____ is a quadrilateral with one pair of acute angle and one pair of obtuse angles.
(square Ⓐ rectangle Ⓐ trapezium Ⓐ parallelogram)

Ⓓ A _____ is a quadrilateral with two pairs of parallel sides and all of its sides are equal.
(rectangle Ⓐ rhombus Ⓐ trapezium Ⓐ parallelogram)

Ⓔ A _____ is a quadrilateral with two pairs of congruent adjacent sides, two acute angles and two obtuse angles.
(rectangle Ⓐ rhombus Ⓐ trapezium Ⓐ kite)

Ⓕ A _____ is a quadrilateral with two pairs of parallel sides, and all of its angles are right angles.
(rectangle Ⓐ rhombus Ⓐ trapezium Ⓐ parallelogram)

Ⓖ A _____ is a quadrilateral with two pairs of parallel sides, all its angles are right and all its sides are equal in length.
(rhombus Ⓐ trapezium Ⓐ parallelogram Ⓐ square)

Ⓗ A parallelogram with four right angles is a
(rectangle Ⓐ rhombus Ⓐ trapezium Ⓐ parallelogram)

① A parallelogram with four equal sides is a _____
(rectangle ☐ rhombus ☐ trapezium ☐ parallelogram)

② A rectangle with four equal sides is a _____
(square ☐ rhombus ☐ trapezium ☐ parallelogram)

③ A rhombus with four right angles is a _____
(square ☐ rectangle ☐ trapezium ☐ parallelogram)

3 Put a tick (✓) in front of the appropriate properties for each quadrilateral:

Properties	Parallelogram	Rectangle	Square	Rhombus	Trapezium	Kite
Only one pair of parallel sides						
Two pairs of opposite parallel sides						
Two pairs of congruent adjacent sides						
4 congruent sides						
4 right angles						
Two acute angles and two obtuse angles						

4 Study the following figures, then complete.

- ① The corresponding figure is called a _____
- ② \overline{AB} and _____ are parallel and congruent
- ③ \overline{AD} and _____ are parallel and congruent
- ④ $\angle A$ and $\angle C$ are _____ angles.
- ⑤ $\angle B$ and $\angle D$ are _____ angles.



Applications of Geometry and Measurement

③ 1 The corresponding figure is called a

2 \overline{AB} and are parallel and congruent.

3 \overline{AD} and are parallel and congruent.

4 All angles are angles.



④ 1 The corresponding figure is called a

2 \overline{KN} and are parallel.

3 \overline{KL} and are parallel.

4 \overline{KN} and are congruent.

5 $\angle N$ and $\angle L$ are angles.

6 $\angle K$ and $\angle M$ are angles.



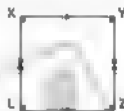
⑤ 1 The corresponding figure is called a

2 \overline{XL} and are parallel.

3 \overline{XY} and are parallel.

4 \overline{XY} and are congruent.

5 All angles are angles.



⑥ 1 The corresponding figure is called a

2 \overline{AB} and are parallel.



⑦ 1 The corresponding figure is called a

2 \overline{XL} and are congruent.

3 \overline{ZL} and are congruent.



Assessment

on Less

Unit 10

1 Choose the correct answer:

- Ⓐ A _____ is a quadrilateral with two pairs of congruent adjacent sides
(kite ☐ trapezium ☒ parallelogram ☐ rectangle)
- Ⓑ A _____ is a quadrilateral in which all angles are right.
(rectangle ☒ rhombus ☐ parallelogram ☐ trapezium)
- Ⓒ $2\frac{1}{2} \times 3\frac{1}{3} =$ (8 $\frac{1}{3}$ ☐ 5 $\frac{2}{3}$ ☒ 2 $\frac{5}{3}$ ☐ 6 $\frac{1}{6}$)
- Ⓓ $\frac{25}{50} =$ (In the simplest form) ($\frac{2}{5}$ ☒ $\frac{50}{100}$ ☐ $\frac{5}{10}$ ☐ $\frac{1}{2}$)
- Ⓔ $3 \times \frac{4}{5} = 2 \times$ ($\frac{14}{5}$ ☐ $\frac{12}{5}$ ☒ $\frac{6}{5}$ ☐ 6)

2 Complete the following:

- Ⓐ A quadrilateral that has only one pair of parallel sides is a _____
- Ⓑ A quadrilateral that has one pair of acute angles, one pair of obtuse angles, and two pairs of parallel sides and all its sides are equal is a _____

Ⓒ $\frac{12}{4} = \frac{3}{4}$

Ⓓ $3\frac{4}{5} + \quad = 5\frac{1}{2}$

Ⓔ $5 \div \frac{1}{3} =$

3 Study the corresponding figure, then complete:


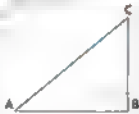

- Ⓐ The corresponding figure is called a _____
- Ⓑ \overline{YZ} and _____ are parallel and congruent
- Ⓒ \overline{XY} and _____ are parallel and congruent.
- Ⓓ $\angle X$ and $\angle Z$ are _____ angles.
- Ⓔ $\angle Y$ and $\angle L$ are _____ angles.



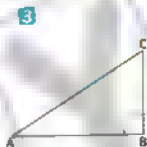
Lesson 2

- 1 Measure the sides of the following triangles and determine the types of their angles, then classify them according to the lengths of their sides and the types of their angles. Use a ruler to measure the lengths to the nearest $\frac{1}{2}$ cm or the nearest whole number

① Triangle

	1	2	3
			
AB	cm	cm	cm
BC	cm	cm	cm
AC	cm	cm	cm
Type of the Triangle According to the Lengths of Its Sides			
Angles Measures			
A			
B			
C			
Type of the Triangle According to the Types of Its Angles			

③ Triangle



Sides Lengths	AB	cm	cm	cm
	BC	cm	cm	cm
	AC	cm	cm	cm
Type of the Triangle According to the Lengths of Its Sides				
Angles Measures	A			
	B			
	C			
Type of the Triangle According to the Types of Its Angles				

2 Complete the following:

- ① The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle.
- ② The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle.
- ③ The type of triangle whose side lengths are equal according to the lengths of its sides is a/an _____ triangle.

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- a** The type of triangle whose angles are all acute according to the types of angles is a/an _____ triangle.
- b** The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an _____ triangle.
- c** The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is a/an _____ triangle.
- d** Any triangle has at least _____ acute angle(s).
- e** The type of an equilateral triangle according to the types of its angles, is a/an _____ triangle.

3 Choose the correct answer

- a** A triangle whose sides are _____ cm, 4 cm, and 7 cm is a scalene triangle. (4 ☒ 5 ☐ 6 ☐ 8)
- b** A triangle whose side lengths are 8 cm, 5 cm, and _____ cm is an isosceles triangle. (6 ☐ 5 ☐ 3 ☐ 4)
- c** A triangle whose side lengths are 4 cm, 4 cm, and _____ cm is an equilateral triangle. (3 ☐ 5 ☐ 7 ☐ 4)
- d** Any triangle contains at least _____ acute angle(s). (0 ☐ 1 ☐ 2 ☐ 3)
- e** A _____ angles of an acute triangle are _____ angles. (acute ☐ obtuse ☐ right ☐ straight)
- f** The triangle that has a right angle and two acute angles is called a/an _____ triangle. (acute ☐ right ☐ equilateral ☐ obtuse)
- g** A triangle that contains one obtuse angle and two acute angles is called a/an _____ triangle. (acute ☐ right ☐ equilateral ☐ obtuse)

Assessment

on Lesson 24

Unit 10

1 Choose the correct answer:

- Ⓐ A triangle whose side lengths are 5 cm, 7 cm, and 5 cm is called a/an _____ triangle (equilateral ☐ scalene ☒ isosceles ☐ scalene)
- Ⓑ A triangle that contains one right angle and two acute angles is called a/an _____ triangle. (acute ☐ obtuse ☒ right ☐ equilateral)
- Ⓒ $3 \div 6 =$ _____ ($\frac{3}{2}$ ☐ $\frac{3}{4}$ ☒ $\frac{1}{2}$ ☐ 2)
- Ⓓ $\frac{3}{5} \times$ _____ = 6 (15 ☐ 10 ☐ 2 ☒ 5)
- Ⓔ A _____ is a quadrilateral in which there are two pairs of parallel sides, two acute angles and two obtuse angles. (square ☐ rectangle ☒ trapezium ☐ parallelogram)

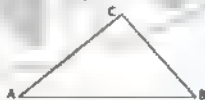
2 Complete the following:

- Ⓐ The type of triangle whose side lengths are 4 cm, 3 cm, and 6 cm according to the lengths of its sides is a/an _____ triangle
- Ⓑ The trapezium is a quadrilateral with _____ of parallel sides
- Ⓒ $3\frac{4}{5} + 2\frac{3}{4} =$ _____ $\frac{5}{6} \div \frac{1}{24} =$ _____ $3\frac{4}{5} \times \frac{6}{7} = 2\frac{1}{7}$

3 Answer the following:

- Ⓐ Study the following figure, then complete:

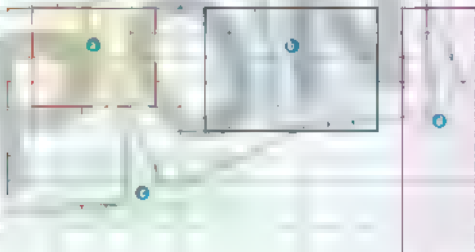
- 1 The lengths of the sides AB = _____ cm, BC = _____ cm, AC = _____ cm
- 2 The type of triangle according to the lengths of its sides is _____
- 3 The lengths of the angles:
- $\angle A$ is a/an _____ angle.
 - $\angle B$ is a/an _____ angle
 - $\angle C$ is a/an _____ angle
- 4 The type of triangle according to the types of its angles is _____



- Ⓑ Niha, had $10\frac{1}{2}$ pounds. She bought candy for $6\frac{1}{4}$ pounds. How much money is left with her?

3&4

- 1 Find the **area** of each of the rectangles shown on the drawing:



Rectangle	a	b	c	d
Area (square units)				

- 2 Draw rectangles whose **areas** are:
(12 square units – 10 square units – 8 square units):



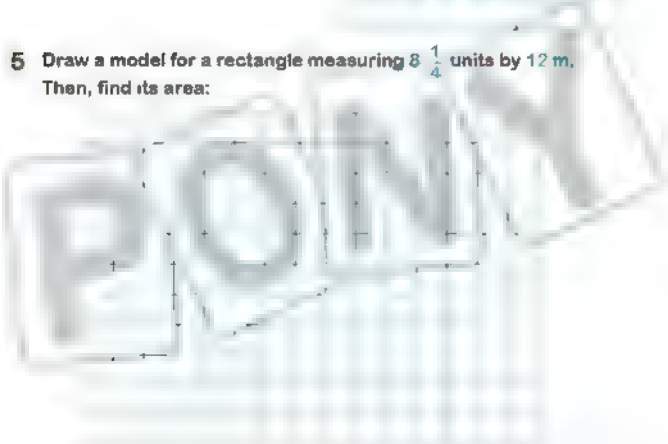
- 3 Nehal is tiling her $4 \times 5\frac{1}{2}$ unit bathroom. The tiles come in 1 unit squares. How many tiles will she need to cover the floor? Model your thinking.



- 4 Amir is measuring a painting. It is 5 units long by $3\frac{1}{2}$ units wide. What is the area of this painting?



- 5 Draw a model for a rectangle measuring $8\frac{1}{4}$ units by 12 m. Then, find its area:



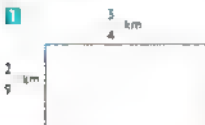
6 Answer the following:

- Ⓐ Akram's herb garden is 10 units long and $\frac{1}{3}$ units wide.
What is the area of Akram's herb garden?

- Ⓑ A trench was dug in Doaa's backyard to fix her plumbing.
The trench is 8 meters long and $\frac{1}{10}$ m wide.
What is the area of the trench?

- Ⓒ A mosque has a window that is $\frac{3}{10}$ meter wide and 2 meters long.
What is the area of the window in square meters?

- Ⓓ Find the area of the following rectangles.



Area =



Area =

7 Complete the following table.

	Length	Width	Area
Ⓐ	$4\frac{1}{2}$ cm	$3\frac{2}{3}$ cm	cm ²
Ⓑ	$3\frac{1}{4}$ cm	2 cm	cm ²
Ⓒ	cm	$\frac{1}{5}$ cm	3 cm ²
Ⓓ	8 cm	$3\frac{3}{4}$ cm	cm ²
Ⓔ	$7\frac{1}{2}$ cm	$4\frac{4}{5}$ cm	cm ²
Ⓕ	9 cm	$3\frac{1}{3}$ cm	cm ²

Assessment

Unit 10

1 Choose the correct answer.

☐ $\frac{1}{2} \div 3 =$

($\frac{3}{2}$ or $\frac{2}{3}$ or $\frac{1}{6}$ or 6)

☐ $2\frac{1}{2} + \quad = 7$

($6\frac{1}{2}$ or $4\frac{1}{2}$ or $9\frac{1}{2}$ or $5\frac{1}{2}$)

☐ The rectangle has _____ of parallel sides.

(1 pair or 2 pairs or 3 pairs or 4 pairs)

☐ A _____ is a quadrilateral with four sides of equal length

(rectangle or trapezium or rhombus or parallelogram)

☐ A right triangle contains a right angle and two _____ angles

(acute or right or obtuse or straight)

2 Complete the following:

☐ The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is _____

☐ The area of a rectangle whose dimensions are $1\frac{3}{4}$ cm and $\frac{4}{5}$ cm is _____ cm².
☐ $3\frac{1}{3}$ hours = _____ hours, _____ minutes.

☐ $\frac{15}{25} = \frac{3}{5}$

☐ $4\frac{3}{8} \times 1\frac{1}{7} =$

3 Answer the following.

☐ Draw a rectangle with the following dimensions

Length = $4\frac{1}{2}$ units, width = $2\frac{1}{2}$ units

Then, find its area.

☐ Mona bought $6\frac{1}{4}$ meters of fabric, the price of one meter is $3\frac{1}{5}$ pounds. What is the price of the whole fabric she bought?

Assessment on Concept 1



First: Choose the correct answer.

- 1 Any triangle has at least ☐ acute angle(s). (0 ☐ 1 ☐ 2 ☐ 3)
 - 2 A triangle that contains one obtuse angle and two acute angles is called a/an ☐ triangle (acute ☐ right ☐ equilateral ☐ obtuse)
 - 3 A ☐ is a quadrilateral with one pair of acute angles and one pair of obtuse angles (square ☐ rectangle ☐ trapezium ☐ parallelogram)
 - 4 A ☐ is a quadrilateral in which all its sides are of equal length. (parallelogram ☐ rhombus ☐ rectangle ☐ trapezium)
- The rectangle whose width is $\frac{3}{4}$ cm and its area is $\frac{3}{4}$ cm²,
 its length is ☐ cm. ($\frac{9}{4}$ ☐ 4 ☐ $\frac{4}{9}$ ☐ $\frac{4}{3}$)

Second: Complete the following.

- 1 A rectangle whose dimensions are $9\frac{1}{3}$ m and $2\frac{1}{7}$ m, its area is m²
- 2 A kite contains of adjacent sides that are congruent.
- 3 A quadrilateral that has only one pair of parallel sides is a
- 4 The type of triangle whose side lengths are 8 cm, 8 cm, and 8 cm according to the lengths of its sides is
- 5 Area of the rectangle = X

Third: Answer the following:

- a Draw a rectangle with length $5\frac{1}{3}$ units and width 3 units, then find its area.
- b A parking lot is $2\frac{1}{4}$ km long and $1\frac{1}{5}$ km wide. What is the area of the parking lot?

Concept 10.2 Coordinate Planes

Lessons 5-7

- 1 Use the following number line to complete



- ☐ Ⓐ The value of A is _____.
 - ☐ Ⓑ The value of B is _____.
 - ☐ Ⓒ The value of C is _____.
 - ☐ Ⓓ The distance between A and B is _____.
 - ☐ Ⓔ The distance between C and A is _____.
- 2 Use the following number line to complete



- ☐ Ⓐ The value of X is _____.
 - ☐ Ⓑ The value of Y is _____.
 - ☐ Ⓒ The value of Z is _____.
 - ☐ Ⓓ The distance between X and Y is _____.
 - ☐ Ⓔ The distance between Y and Z is _____.
- 3 Use the opposite number line to complete

- ☐ Ⓐ The value of A is _____.
- ☐ Ⓑ The value of B is _____.
- ☐ Ⓒ The value of C is _____.
- ☐ Ⓓ The value of D is _____.
- ☐ Ⓔ The distance between A and B is _____.
- ☐ Ⓕ The distance between C and B is _____.
- ☐ Ⓖ The distance between D and C is _____.
- ☐ Ⓗ The distance between D and B is _____.

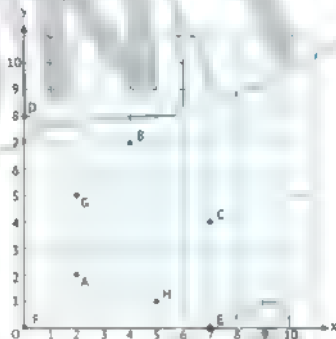


Applications of Geometry and Measurement

- ① The distance between C and A is
- ② The distance between D and A is

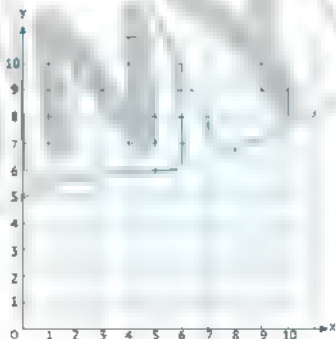
4 In the following **coordinate plane**, write the **ordered pair** representing each of the following points:

- Ⓐ A (,)
- Ⓑ B (,)
- Ⓒ C (,)
- Ⓓ D (,)
- Ⓔ E (,)
- Ⓕ F (,)
- Ⓖ G (,)
- Ⓗ H (,)



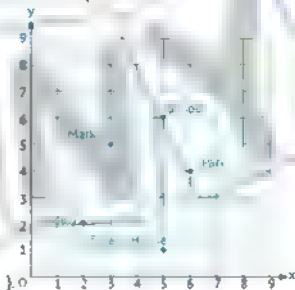
5 Plot the following **points** on the **coordinate plane**:

- Ⓐ A(2, 3)
- Ⓑ B(3, 5)
- Ⓒ C(0, 0)
- Ⓓ D(7, 0)
- Ⓔ E(0, 7)
- Ⓕ F(8, 8)
- Ⓖ G(4, 6)
- Ⓗ H(6, 1)



6 Use the following coordinate grid to complete

- The ordered pair representing the library is (,).
- The ordered pair representing the park is (,).
- The ordered pair representing the school is (,).
- The ordered pair representing the market is (,).
- The ordered pair representing Ezzat's house is (,).



- To move from the school to the library, move to the left of the x-coordinate unit(s), then move down to the y-coordinate unit(s).
- To move from the library to the market, move to the of the x-coordinate unit(s), then move to the of the y-coordinate unit(s).
- To move from the park to Ezzat's house, move to the of the x-coordinate unit(s), then move to the of the y-coordinate unit(s).

7 Plot the following points on the coordinate plane, then answer:

A (1, 7) B (1, 4)

C (7, 4) D (7, 7)

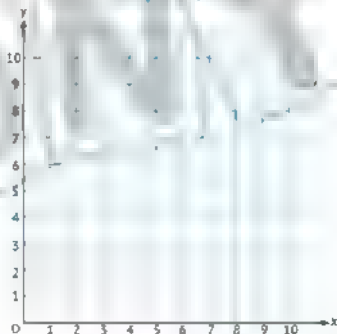
- Connect the points in the following order:

A → B → C → D → A

- What is the name of the resulting figure?

AB = , BC =

AB // , BC //



8 Plot the following points on the coordinate plane, then answer:

$X(2, 3)$, $Y(4, 1)$

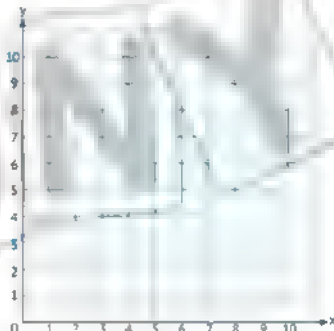
$Z(6, 3)$, $L(4, 8)$

- a** Connect the points in the following order

$X \rightarrow Y \rightarrow Z \rightarrow L \rightarrow X$

- b** What is the name of the resulting figure?

c $XY =$, $XL =$



9 Use the following coordinate grid to complete:

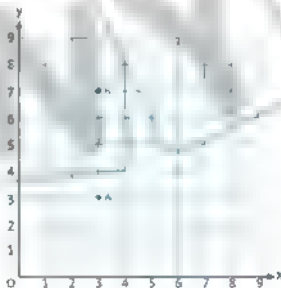
- a** Record the ordered pairs for points A and B

A (,) , B (,)

- b** Draw a line connecting the two points

- c** Place point C to create an isosceles right angle with the right angle at point A

C (,)



10 On the following coordinate plane, plot the points:

F, G, and H to make a figure that is
symmetrical along the vertical red
line drawn on the coordinate plane

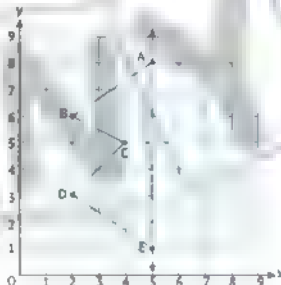
Point F should follow Point E.

Connect point H to point A to
close the shape

Then, list the coordinates of F, G,
and H

F (,) G (,)

H (,)

**11 Complete the following sentences.**

- Ⓐ In the ordered pair (6 , 5), the x-coordinate is and the y-coordinate is
- Ⓑ The ordered pair representing the origin is (,).
- Ⓒ The point of intersection of the x-axis with the y-axis is called
- Ⓓ The vertical number line in the coordinate plane is called
- Ⓔ The horizontal number line in the coordinate plane is called
- Ⓕ To move from point (1 , 5) to point (1 , 1), we move the y-coordinate unit(s).

Assessment

Unit 10

1 Choose the correct answer

- Ⓐ The point _____ lies on the x-axis. ((5, 0) or (0, 5) or (1, 5) or (5, 1))
- Ⓑ A _____ is a quadrilateral with all right angles and all its sides are equal. (rhombus or rectangle or square or kite)
- Ⓒ A triangle whose side lengths are _____ cm, 5 cm, and 5 cm is an _____ equilateral triangle. (5 or 10 or 3 or 15)
- Ⓓ $\frac{36}{48} =$ (In the simplest form) ($\frac{12}{16}$ or $\frac{9}{12}$ or $\frac{6}{8}$ or $\frac{3}{4}$)
- Ⓔ $2\frac{1}{4}$ hours = _____ minutes. (27 or $\frac{9}{4}$ or 135 or 225)

2 Complete the following:

- Ⓐ $6 \times \frac{3}{7} = 2 \times$ _____ Ⓑ $\frac{1}{2} \div 4 =$ _____
- Ⓒ The rectangle whose dimensions are $2\frac{1}{2}$ cm and 3 cm, its area is _____ cm²
- Ⓓ The _____ axis is the horizontal number line in the coordinate plane
- Ⓔ The number of axes of symmetry of a rectangle is _____

3 Answer the following:

- Ⓐ Safaa has a $\frac{3}{4}$ -meter strip of fabric. She wants to divide it into parts of $\frac{1}{4}$ meters each. How many parts will she get?

- Ⓑ Locate the following points on the coordinate grid, then answer:

A (2, 2), B (5, 2)

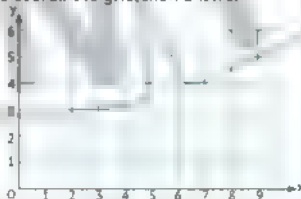
C (6, 4), D (3, 4)

- 1 Connect the points in the following order:

A → B → C → D → A

- 2 What is the name of the resulting figure?

- 3 Draw a line connecting points A and C, and another line connecting points B and D. What are the coordinates of the point where the two lines intersect? (____, ____)



Lesson 8

- 1 Use the ordered pairs to fill in the tables (Complete the tables).

Ⓐ $(1, 2), (2, 3), (3, 4), (4, 5), (5, 6)$

x-values

1

2

3

y-values

Ⓑ $(2, 5), (4, 7), (6, 9), (8, 11), (10, 13)$

x-values

y-values

- 2 Identify the pattern of x-values and y-values, then write the represented ordered pair.

Ⓐ

x-values

2

3

4

y-values

3

4

5

$(\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad)$

$(\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad)$

Ⓑ

x-values

1

3

5

y-values

2

6

10

$(\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad)$

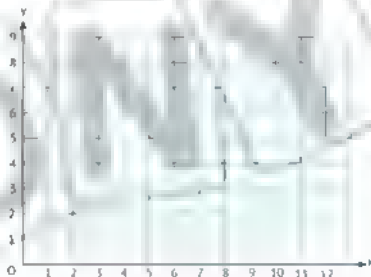
$(\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad), (\quad, \quad)$

3 Represent the following tables on the coordinate plane:

a

x-values y-values

1	4
2	5
3	6
4	7
5	8
6	9



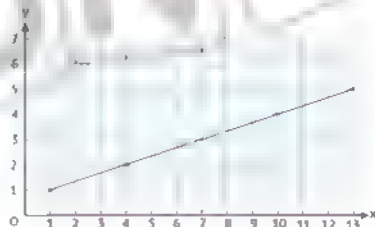
b

x-values y-values

1	1
3	2
5	3
7	4
9	5
11	6

**4 Use the following coordinate plane to complete the table**

x-values y-values



5 Represent the two tables on one graph:

a Pattern 1:

x-values 1 3 5 7

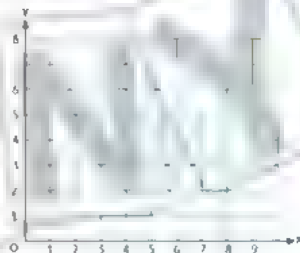
y-values 2 3 4 5

Pattern 2:

x-values 1 2 3 4

y-values 2 4 6 8

Key Pattern 1 Pattern 2



b Pattern 1:

x-values 2 4 6 8

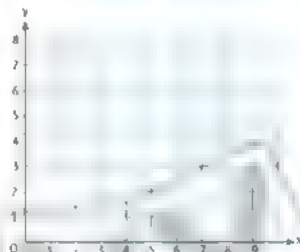
y-values 1 2 3 4

Pattern 2:

x-values 2 4 6 8

y-values 2 4 6 8

Key Pattern 1 Pattern 2



6 Complete the following patterns:

Pattern 1:

x-values

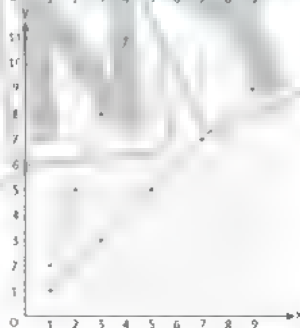
y-values

Pattern 2:

x-values

y-values

Key Pattern 1 Pattern 2



- 7 Haitham is a city planner. He is building a collection of square garden beds in a local park. In Haitham's design, the gardens increase in size as you move through the park. Shown are the sketches of his ideas. The yellow squares represent the square tile border around the outside of the garden. The white tiles represent the square units of dirt.



1



2



3

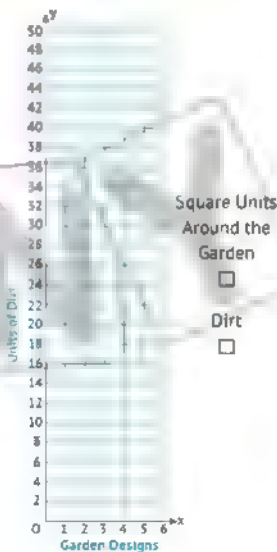


4

- Complete the two tables, and then use the information in the two tables you completed to determine the coordinates of the designs and the number of tiles.

Garden Design, x	Number of Yellow Units, y
1	12
2	16
3	
4	
5	
6	

Garden Design, x	Number of White Units, y
1	12
2	16
3	
4	
5	
6	



Assessment

Unit 1Q

1 Complete the following.

a $3\frac{2}{5} + 2\frac{1}{3} =$

b $7\frac{1}{4} - 3\frac{3}{4} =$

c $3\frac{1}{5} \times 1\frac{7}{8} =$

d $7 \div 2 =$

e $3\frac{7}{4} = 4$

2 Complete the following order pairs and table:

(, 4), (2,), (, 8), (4,)

x-values 1 | | 3

y-values --- | 6 | 10

3 Represent the two tables on the graph:

x-values 1 3 5 7

y-values 1 2 3 4

Pattern 2:

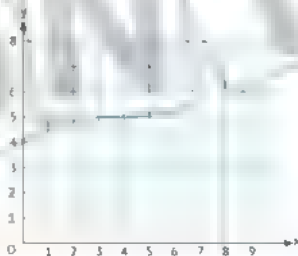
x-values 1 2 3 4

y-values 1 3 5 7

Key

Pattern 1

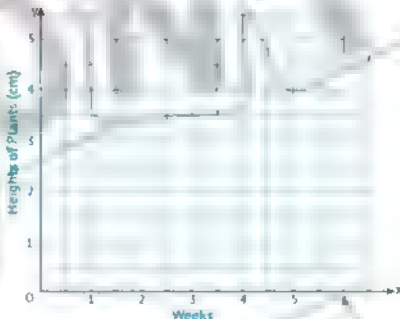
Pattern 2



Lesson 9

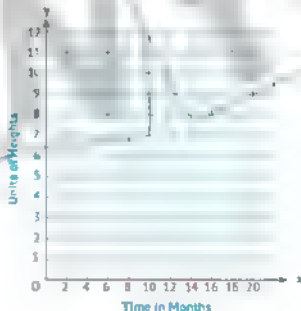
- 1 Look at the table and fill in the missing values based on the pattern of plants heights in Hartham's garden from one week to the next:

Week, x	Heights of Plants, y
1	cm
2	$1\frac{1}{2}$ cm
3	$2\frac{1}{2}$ cm
4	
5	
6	



- 2 The following table shows meerkat growth in the Kalahari of South Africa during their first 20 months of life. Graph the data on the coordinate plane and then connect the points with line segments:

Time in Months, x	Units of Heights, y
0	3
2	5
4	6
6	7
8	8
10	9
12	10
14	12
16	12
18	12
20	12



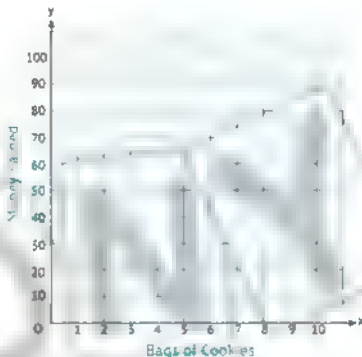
• Answer the following questions:

Ⓐ What does the point (0 months, 3 units) mean for a typical meerkat's height?

Ⓑ At what age do meerkats reach their full height?

- 3 Ola is selling bags of cookies in her neighborhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the following table and then graph the points on the coordinate grid.

Bags of Cookies, x	Money Earned LE, y
2	
4	
7	
8	
10	



• Answer the following questions:

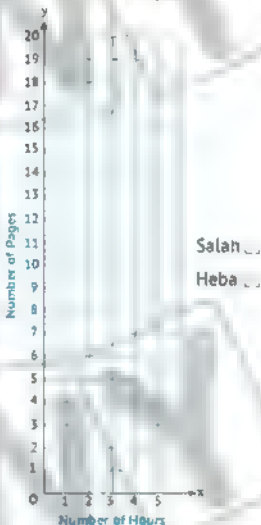
Ⓐ How much money does she earn if she sells 5 bags of cookies?

Ⓑ How many bags does she sell in order to earn 30 LE?

- 4 Salah and Heba work in a typing office; Salah can type 3 pages on the computer per hour, and Heba can type 4 pages on the computer per hour. The following two tables show the number of pages that each of them writes. Complete the two tables and then determine the existing data on the coordinate plane:

Salah (3 pages/hour)	
Number of Hours	Number of Pages
1	3
2	6
3	
4	
5	

Heba (4 pages/hour)	
Number of Hours	Number of Pages
1	4
2	8
3	
4	
5	



• Answer the following questions:

- Ⓐ How many pages does Heba type in 4 hours?
- Ⓑ How long does it take Salah to type 15 pages?
- Ⓒ How many more pages does Heba write than Salah writes in 5 hours?

Assessment

on Lesson 9

Unit 10

1 Complete the following.

a $\frac{4}{9} = \frac{16}{\quad}$

b $3\frac{7}{3} = 4$

c 30 months = $\frac{\quad}{\quad}$ years

d A $\frac{\quad}{\quad}$ is a quadrilateral with all sides equal in length and 4 right angles.

e The type of an equilateral triangle according to the types of its angles is a/an $\frac{\quad}{\quad}$ triangle.

2 Find the result. Put your answer in the simplest form, if possible:

a $3\frac{1}{5} + 2\frac{1}{3} =$

b $7\frac{1}{2} - 3\frac{3}{4} =$

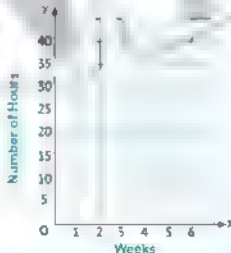
c $3\frac{1}{3} \times 1\frac{1}{5} =$

d $8 \div 12 =$

3 Answer the following:

Look at the table below and fill in the unknown y -values based on the pattern of how many hours per week Hussam spends in swimming practice. Locate the coordinate points on the graph.

Week, x	Number of Hours, y
1	5
2	10
3	15
4	
5	
6	



Assessment on Concept 2



First: Complete the following:

- 1 The horizontal number line in the coordinate plane is called the **x**-axis.
- 2 In the ordered pair (5, 3), the **y**-coordinate is **3**.
- 3 Point (6, 0) lies on the **x**-axis.
- 4 Point (0, 0) is called the **origin**.
- 5 The origin is the point of intersection of the **x**-axis and **y**-axis.

Second: Locate the following points on the coordinate grid, then answer:

A (4, 1), B (6, 3), C (4, 5), D (2, 3)

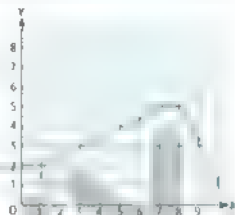
- 1 Match the points in the following order

A → B → C → D → A

- 2 What is the name of the resulting figure?

3 $\overline{AB} \parallel \overline{CD}$, $\overline{BC} \parallel \overline{DA}$

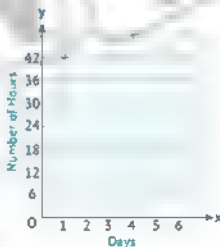
- 4 Draw \overline{AC} and \overline{BD} . What are the coordinates of the point where the two lines intersect?



Third: Answer the following:

- 1 Observe the table below and fill in the unknown y-values based on the pattern of hours that Galat spends working per day. Mark the coordinate points on the graph and draw a line.

Day, x-axis	1	2	3	4	5	6
Number of Hours, y-axis	6	12	18			



Assessment

1

on



First: Complete the following:

- The horizontal number line in the coordinate plane is called the **x**-axis.
- The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an **right** triangle.
- Point (8, 0) lies on the **x**-axis.
- The quadrilaterals that have four sides of equal length are **squares** and **rhombuses**.
The area of a rectangle of length $3\frac{3}{4}$ m and width $2\frac{2}{3}$ m is **$10\frac{1}{2}$** m².

Second Measure the sides of the following triangle. Identify the types of its angles, then classify it according to the lengths of its sides and the types of its angles:

- 1 Lengths of the sides:

AB = **3** cm, BC = **4** cm, AC = **5** cm.

- 2 Types of its angles:

Ⓐ **∠ A** is **acute**

Ⓑ **∠ B** is **right**

Ⓒ **∠ C** is **acute**

- 3 The type of the triangle according to the lengths of its sides is **right triangle**.
- 4 The type of the triangle according to the types of its angles is **right triangle**.



Third. Using the following coordinate grid, answer.

- 1 Write the **ordered pair** of the points shown

A (**1, 1**), B (**7, 1**), C (**6, 5**), D (**2, 5**).

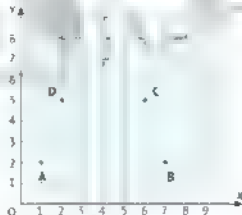
Match the points in the following order:

A → B → C → D → A

- 2 What **s** the **name** of the resulting figure?

3 **$\overline{AB} \parallel \overline{CD}$**

- 4 Draw the possible **lines of symmetry** for this shape



Assessment 2 on



First: Complete the following:

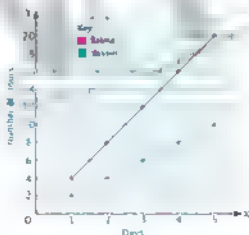
- 1 The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an _____ triangle
- 2 In the ordered pair (2, 7), the x-coordinate is _____
- 3 The quadrilaterals that have four right angles are _____ and _____
- 4 The length of a rectangle with a width of $\frac{1}{4}$ cm and an area of 3 cm² is _____ cm.
- 5 The point _____ is the point of intersection of x-axis and y-axis.

Second: Answer the following:

- Draw a rectangle:
Its length is $3\frac{1}{2}$ units and its width is 3 units.
Then find its area.
- Area of the rectangle = _____ square units

Third: Answer the following:

- The following graph shows the total number of study hours for both Salma and Yassin over a period of 5 days. Study the graph, then answer
- Ⓐ What rule that describes the total number hours Salma studied?
- Ⓑ What rule that describes the total number of hours Yassin studied?



11.1 Understanding Volume and Capacity

1-3

1 Complete the following:

- a 1 The opposite solid is called
 2 The number of faces is , the shape of each face is
 3 Number of edges , number of vertices
- b 1 The opposite solid is called
 2 The number of faces is , the shape of each face is
 3 Number of edges , number of vertices
- c 1 The opposite solid is called
 2 The number of faces is , the shape of each face is
 3 Number of edges: , number of vertices:
- d 1 The opposite solid is called
 2 The number of faces is , the shape of each face is
 3 Number of edges , number of vertices
- e 1 The opposite solid is called
 2 The number of faces is , the shape of each face is
 3 Number of edges , number of vertices:

Applications of Geometry and Measurement

- ❶ The 3D shape that has two faces, each in the shape of a circle, is
- ❷ The 3D shape that does not have faces, edges, or vertices is
- ❸ The 3D shape that has only one face in the shape of a circle is

2 Choose the correct answer

- ❶ The number of edges in a cube is (6 or 8 or 12 or 5)
- ❷ The number of faces of a rectangular prism is (6 or 8 or 12 or 5)
- ❸ The number of vertices of a rectangular prism is (6 or 8 or 12 or 5)
- ❹ Each face of the cube is in the form of a

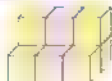
(square or rectangle or triangle or circle)

- ❺ A is a 3D shape with one vertex and one face in the shape of a circle (cylinder or sphere or cone or circle)

- ❻ A is a 3D shape that has two faces, each in the shape of a circle. (cylinder or sphere or cone or circle)

- ❼ A is a 3D shape with 5 faces, one of which is a square and the other one is in the shape of a triangle (rectangular prism or cube or square pyramid or cone)

- ❶ The volume of the opposite 3D shape is cm^3 . (9 or 6 or 13 or 7)



- ❷ The volume of the opposite 3D shape is cm^3 . (20 or 16 or 12 or 13)



- 1 When the opposite 3D shape is divided into 4 layers, each layer contains _____ cubes.

(32 or 16 or 8 or 4)



- 2 When the opposite 3D shape is divided into 3 slices, each slice contains _____ cubes.

(9 or 21 or 18 or 27)



- 3 Find the volume (number of cubes) of each of the following shapes, where each cube represents 1 cm^3 :



1



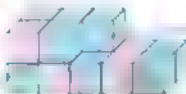
2



3



4



5



6



7



8



9

Shape	1	2	3	4	5	6	7	8	9
Volume (cm^3)									

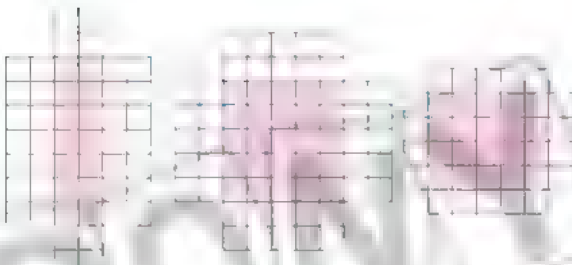
- 4 Copy, cut, fold, and paste each of the following shapes to form a box, then find the volume, since each cube is 1 cm^3 :



1

2

3



4

5

6

Shape

1

2

3

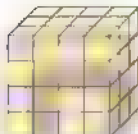
4

5

6

Actual Volume (cm^3)

- 5 Decompose each of the following cuboids into **layers** or **slices** in **three different ways**, and calculate its **volume**, since each cube represents 1 cm^3 :



1



2



3



4

Rectangular Prism

1

2

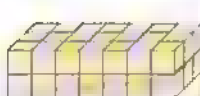
3

4

Number of Layers/Slices

Cubes in Each Layer/Slice

Volume of the Rectangular Prism



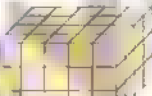
5



6



7



8

Rectangular Prism

5

6

7

8

Number of Layers/Slices

Cubes in Each Layer/Slice

Volume of the Rectangular Prism

Assessment

Unit 11

1 Choose the correct answer:

- Ⓐ A three dimensional shape whose base is a circle is a
(cone ☒ square pyramid ☒ sphere ☒ cube)
- Ⓑ A triangle whose largest angle is a right angle is called a/an
(right ☒ acute ☒ obtuse ☒ equilateral)
- Ⓒ A quadrilateral that has two pairs of parallel sides and four right angles is a
(rectangle ☒ rhombus ☒ trapezium ☒ parallelogram)
- Ⓓ A window is in the form of a rectangle, $1\frac{2}{5}$ meters long and $\frac{1}{3}$ meters wide then its area is square meters. ($\frac{15}{8}$ ☒ $\frac{8}{15}$ ☒ $\frac{9}{15}$ ☒ $\frac{15}{9}$)
- Ⓔ The triangle whose side lengths are 5 cm, 4 cm, and 3 cm is called a/an triangle
(equilateral ☒ isosceles ☒ scalene ☒ right)

2 Complete the following:

- Ⓐ The number of edges of a cube is edges.
- Ⓑ The volume of the opposite solid is cubes.
- Ⓒ $\frac{2}{3}$ of 9 tiles is tiles.
- Ⓓ $2\frac{3}{5} \times \frac{5}{9} =$ $\frac{2}{3} \div 5 =$



3 Copy the following shape, cut it out, fold it and paste it to make a box:

- Ⓐ The actual volume of the box is cm^3
- Ⓑ When dividing the resulting shape into layers, then:
- 1 The number of layers is layers.
 - 2 The number of cubes in each layer is cube(s)
- Ⓒ When dividing the resulting shape into slices, then:
- 1 The number of slices is slices.
 - 2 The number of cubes in each slice is cube(s).

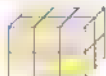


Assessment on Concept 1



First: Choose the correct answer:

- 1 A _____ is a three-dimensional shape with two faces in the form of a circle. (cone ☒ cylinder ☐ sphere ☐ square pyramid)
- 2 A _____ is a two-dimensional figure with 4 sides and 4 right angles. (rhombus ☐ parallelogram ☐ rectangle ☒ kite)
- 3 A rectangular prism is a three-dimensional shape that contains _____ faces. (12 ☒ 8 ☐ 6 ☐ 9)
- 4 A parallelogram is a two-dimensional figure that has _____ of parallel sides. (1 pair ☒ 2 pairs ☐ 3 pairs ☐ 4 pairs)
- 5 The corresponding figure is a three-dimensional figure consisting of _____ cubes. (12 ☒ 16 ☐ 8 ☐ 10)



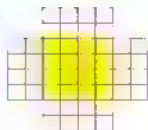
Second Complete the following:

- 1 A _____ is a 3D shape that has only one face in the shape of a circle.
- 2 A _____ is a two-dimensional figure that has only one pair of parallel sides.
- 3 A cube is a three-dimensional shape with _____ faces, and each face is in the form of a _____.
- 4 _____ is the amount of space occupied by a three-dimensional shape.
- 5 _____ is the amount of liquid a container can hold.

Third: Copy the following shape, cut it out, fold it, and paste it to make a box:

The actual volume of the box is _____ cm^3 .

- 1 When dividing the resulting shape into layers, then
 - a Number of layers = _____ layers.
 - b Number of cubes in each layer = _____ cubes.
- 2 When dividing the resulting shape into slices, then
 - a Number of slices = _____ slices.
 - b Number of cubes in each slice = _____ cubes.



11.2 Measuring Volume

Exercise 4&5

1 Complete the following table:

	Length	Width	Height	Volume of the Rectangular Prism
a	9 cm	4 cm	2 cm	72 cm ³
b	12 cm	5 cm	4 cm	240 cm ³
c	10 cm	5 cm	10 cm	300 cm ³
d	8 cm	2 cm	5 cm	80 cm ³
e	8 cm	2 cm	3 cm	48 cm ³
f	5 cm	4 cm	6 cm	120 cm ³

2 Complete the following table:

	Area of the Face/Base	Third Dimension	Volume of the Rectangular Prism
a	35 cm ²	5 cm	175 cm ³
b	12 cm ²	5 cm	60 cm ³
c	24 cm ²	5 cm	120 cm ³
d	16 cm ²	3 cm	48 cm ³
e	20 cm ²	7 cm	140 cm ³
f	9 cm ²	3 cm	27 cm ³

3 Record the **dimensions** of each of the following rectangular prisms, then find the **volume**:



1



2



3



4



5



6



7



8

Length

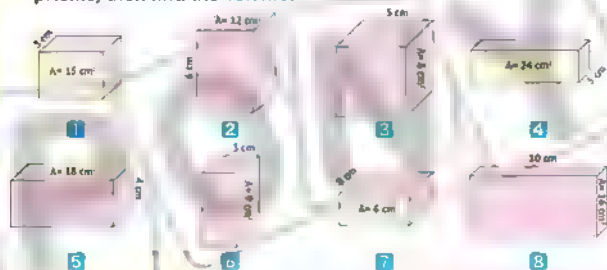
Width

Height

Volume of the
Rectangular Prism

1	cm	cm	cm	cm^3
2	cm	cm	cm	cm^3
3	cm	cm	cm	cm^3
4	cm	cm	cm	cm^3
5	cm	cm	cm	cm^3
6	cm	cm	cm	cm^3
7	cm	cm	cm	cm^3
8	cm	cm	cm	cm^3

- 4 Record the **dimensions** of each of the following rectangular prisms, then find the **volume**:



	Area of the Face/Base	Third Dimension	Volume of the Rectangular Prism
1	cm ²	cm	cm ³
2	cm ²	cm	cm ³
3	cm ²	cm	cm ³
4	cm ²	cm	cm ³
5	cm ²	cm	cm ³
6	cm ²	cm	cm ³
7	cm ²	cm	cm ³
8	cm ²	cm	cm ³

- 5 A rectangular prism has a volume of 400 cm^3 and its base area is 80 cm^2 . Find its height.
- 6 A rectangular prism has a volume of 120 cm^3 , a length of 8 cm and a height of 5 cm. Find its width.
- 7 Which is larger? A rectangular prism that has dimensions of 5 cm, 10 cm, and 4 cm, or a rectangular prism that has an area of one face 60 cm^2 and its third dimension is 7 cm?

Assessment

Unit 11

1 Complete the following:

- A rectangular prism has a volume of 240 cm^3 and its base area is 80 cm^2 , then its height is $\quad \text{cm}$.
- A \quad is a quadrilateral with two pairs of congruent adjacent sides.
- A \quad is the point of intersection of the x-axis and y-axis in the coordinate plane.
- The type of triangle that contains one right angle and two acute angles, according to the types of its angles is a/an \quad triangle.
- A \quad is a solid with one circle-shaped face and one vertex.

2 Find the result. Put your answer in the simplest form, if possible:

- $4\frac{2}{3} + 3\frac{1}{2} =$
- $7\frac{1}{2} - 3\frac{3}{4} =$
- $3\frac{1}{8} \times 2\frac{1}{5} =$
- $\frac{1}{2} \div 5 =$

3 Answer the following:

- Plot the following points on the coordinate grid and answer.

A(1, 1), B(5, 1), (8, 4), C(4, 4)

• Connect the points in the following order:

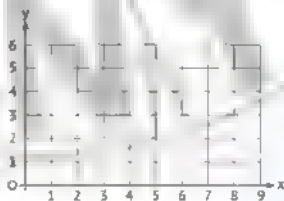
A \rightarrow B \rightarrow C \rightarrow D \rightarrow A

1. What is the name of the resulting shape?

2. $\overline{AB} \parallel \quad$ $\overline{BC} \parallel \quad$

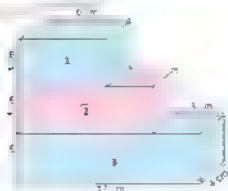
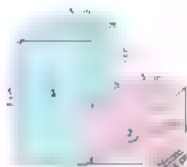
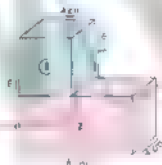
- In the opposite solid:

- Length = $\quad \text{cm}$.
- Width = $\quad \text{cm}$.
- Height = $\quad \text{cm}$.
- Volume = $\quad \text{cm}^3$.



Exercise 6&7

1 Calculate the volume of each of the following compound shapes:



- 2 Osman built a planter box for his backyard. The length of the planter box was 150 centimeters. The width was 90 cm, and the height of the box was 120 cm. Osman poured soil into the box up to the 100 cm height line. What is the volume of the planter box? What is the volume of the soil?



- 3 Fares built a small planter box for his window. He planned to fill it to the top with 12 000 cubic centimeters of soil. The base of the planter box measured 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?



- 4 Nahla decided to build planter boxes. She wanted two boxes with different dimensions, but the same volume of 20 000 cubic centimeters.

- Ⓐ Show two ways she could build these planters
- Ⓑ Record equations to match each prism.



- 5 Rami wanted to build a new shed. He had a spot outside his house that had an area of 4 meters in length by 3 m width. He needed the new shed to have a volume of 72 m³. How tall will the shed need to be?



- 6** Two boxes of equal volume, the first box has dimensions of 8 cm, 6 cm and 3 cm, and the other box has a base area of 16 cm^2 . Find the height of the other box



- 7** Which is greater in volume?
A rectangular prism whose length is 8 cm, its width is 5 cm, and its height is 4 cm, or a rectangular prism whose base area is 80 cm^2 and its height is 3 cm?

- 8** A cardboard box has the dimensions 30 cm, 30 cm, and 15 cm. How many candies can fit inside it, if each piece is in the shape of a rectangular prism with dimensions 5 cm, 5 cm and 3 cm?



Assessment

Unit 11

1 Complete the following:

a $\frac{6}{9} = \frac{\quad}{36}$

b $4 \times \frac{3}{7} = 2 \times \frac{\quad}{7}$

c $\frac{1}{3} \div 8 = \frac{1}{3} \times \frac{\quad}{\quad}$

d The volume of the rectangular prism (V) =

e The vertical number line in the coordinate plane is called the _____ axis

2 Choose the correct answer

a The _____ is a solid that has 5 faces, one of which is in the form of a square and the rest in the form of a triangle

(cube ☐ rectangular prism ☒ square pyramid ☐ cone)

b If the volume of a rectangular prism is 60 cm³ and its base area is 15 cm², then its height is _____ cm

(4 ☐ 75 ☐ 45 ☐ 900)

c The _____ is a quadrilateral with four equal sides.

(rectangle ☐ trapezium ☒ rhombus ☐ parallelogram)

d The point _____ lies on the y-axis in the coordinate plane

((1, 1) ☐ (5, 0) ☒ (0, 5) ☐ (5, 5))

e The type of triangle whose side lengths are 5 cm, _____ cm, and 5 cm according to the lengths of its sides is a/an _____ triangle

(equilateral ☐ scalene ☒ isosceles ☐ acute)

3 Answer the following:

a Nihal has 9 friends. She made 3 pizza pies for her friends and she wants to divide these pies equally among them.
What is the share of each of them in pies?

b A car for transporting goods has a box with dimensions of 3 m, 2 m and 150 cm. How many small boxes can be placed inside if the box has dimensions of 50 cm, 30 cm, and 40 cm?

Assessment on Concept 2



First Complete the following:

1. A rectangular prism whose length is 5 cm, its width is 2 cm, and its height is 3 cm, then its volume is _____ cm^3
2. A rectangular prism has a base area of 15 cm^2 and a height of 6 cm, so its volume is _____ cm^3
3. A rectangular prism has a volume of 240 cm^3 , a length of 6 cm and a width of 4 cm, then its height is _____ cm
4. A rectangular prism whose length is equal to its width and height, and its volume is 27 cm^3 , then its length is _____ cm.

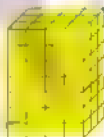
Second Calculate the volume of the following compound shape:

-
-
-
-



Third Record the dimensions of the following rectangular prism, then find its volume:

- Length = _____ cm. • Width = _____ cm.
- Height = _____ cm. • Volume = _____ cm^3



Fourth Answer the following:

- Hossam has a large rectangular prism-shaped chocolate mold that is 30 cm long, 10 cm wide, and 5 cm high. He wants to divide it into 15 equal parts. What is the volume of each of the small parts?

Assessment

1

on



First: Choose the correct answer:

The number of edges of a rectangular prism is

(6 or 8 or 12 or 5)

Each face of the cube is in the shape of a

(square or rectangle or triangle or circle)

A _____ is a 3D shape with one vertex and one face in the shape of a circle. (cylinder or sphere or cone or circle)

A _____ is a 3D shape that has 5 faces, one of which is square and the other faces are triangles. (rectangular prism or cube or square pyramid or cone)

When the corresponding 3D shape is divided into 3 slices, each slice contains _____ cubes. (12 or 18 or 6 or 8)



Second: Find the volumes of the following 3D shapes:



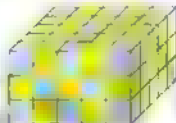
1

Volume = _____ cm^3 .



12

Volume = _____ cm^3 .



3

Volume = _____ cm^3 .

Third: Answer the following:

1. Muhamed has 24 pieces of wood, each in the form of a rectangular prism of equal dimensions (cubes) of 3 cm in length.

What is the size of these pieces combined?

2. If Muhamed wants to put these pieces together to form a rectangular prism consisting of 3 layers. What is the number of pieces in each layer and what is the height of this shape?

Assessment 2 on



First: Choose the correct answer.

1 The number of faces of a cube is (6 or 8 or 12 or 5)

The number of vertices of a rectangular prism is (6 or 8 or 12 or 5)

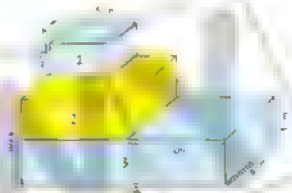
3 A is a 3D shape with two circular faces (cylinder or sphere or cone or circle)

4 A is a three-dimensional shape that does not contain faces, edges, or vertices (cylinder or sphere or cone or circle)

5 The volume of the opposite figure is cubic centimeters.



Second: Calculate the volume of the following compound shape.



Third: Answer the following:

- Two pieces of cheese, each is in the shape of a rectangular prism, of equal volume. The first piece is 12 cm long, 10 cm wide and 8 cm high. If the area of the base of the second piece is 160 cm², what is the height of the second piece?

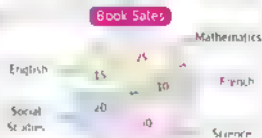
Concept 12.1 Understanding Pie Charts

Lessons 1-3

1 The following pie chart shows the book sales in a library

① Study the chart and complete the table:

Books	Frequency	Fraction	Decimal
Mathematics			
French			
Science			
Social Studies			
English			



② Answer the following questions

- 1 What are the best selling books?
- 2 What are the least sold books?
- 3 How many more science books are sold than English books?
- 4 What is the total number of the sold mathematics and French books?

2 The following table shows the grades of 48 students in Mathematics.

Grade	Excellent	Very Good	Good	Pass	Weak
Number of Students	16	12	8	6	6

• Shade the pie chart using the data in the table, then write the fraction that represents each grade.

- 1 Excellent:
- 2 Very Good:
- 3 Good
- 4 Pass
- 5 Weak.

Students' Grades

Excellent
Very Good
Good
Pass
Weak

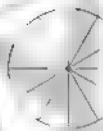
3 In the opposite pie chart:

- Ⓐ Shade $\frac{1}{6}$ of the circle in yellow,
 $\frac{1}{3}$ of the circle in blue, and $\frac{1}{2}$ of the circle in red.

- Ⓑ If the pie chart represents 24 pupils

- ① How many pupils does the blue part represent?
 ② How many pupils does the red part represent?

- Ⓒ What is the decimal represented by the red color?



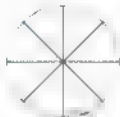
4 In the corresponding pie chart:

- Ⓐ Shade $\frac{3}{4}$ of the circle in green,
 $\frac{1}{8}$ of the circle in blue, and
 $\frac{1}{8}$ of the circle in red.

- Ⓑ If the pie chart represents 40 pupils

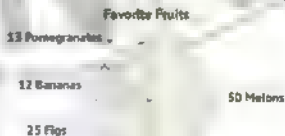
- ① How many pupils does the blue part represent?
 ② How many pupils does the red part represent?

- Ⓒ What is the decimal represented by the green color?



5 Analyze the following pie chart and answer the questions:

- Ⓐ What fraction represents the number of children who participated in the survey and preferred mangoes?
- Ⓑ What fraction represents the number of children who participated in the survey and preferred figs?
- Ⓒ How many children participated in the survey?



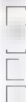
Assessment

on Lessons 1–3

- 1 The following table shows the favorite ice cream flavor of 50 children.

- Ⓐ Write the decimal for each flavor, then shade the pie chart.
Ⓑ Complete the parts of the pie chart using the data in the table, type the title and key.

Flavor	Frequency	Decimal
Mango	5	
Vanilla	25	
Mastic	6	
Chocolate	12	
Hazelnut	2	



- 2 The following pie chart represents a group of people's opinion of what kind of building the city they live in needs. Answer the questions below.

- Ⓐ How many people took part in the survey?

- Ⓑ What fraction is the number of people who participated in the survey and think that the city needs a post office?

- Ⓒ What decimal represents the number of people who participated in the survey and think that the city needs a mosque?

- Ⓓ How many more people think the city needs a library than those who think the city needs a café?

- Ⓔ What is the sum of the number of people who think that the city needs a public park and those who think that the city needs a post office?



Assessment on



Answer the following

- 1 The following pie chart shows the favourite game of a number of pupils.

- Which game do most pupils prefer?
- Which game is preferred by the least number of pupils?
- What fraction represents the pupils who prefer basketball?



- 2 Shade $\frac{1}{3}$ of the circle in blue, and $\frac{1}{4}$ of the circle in black.

- What fraction does the unshaded part represent?

- What decimal is represented by the part colored in black?

- 3 The following table represents the results of a questionnaire about the most preferred fruit by a group of students

Fruit	Mango	Apple	Banana	Orange
Number of Students	18	9	6	3

- 4 Shade the pie chart using the data in the table, then write the fraction that represents each fruit, and complete

- The fraction representing the number of students who prefer
Mango _____, Apple _____,
Banana _____, Orange _____.

- The total number of students who participated in the questionnaire is _____ students.

Mango
Apple
Banana
Orange

Final Revision

on Theme 3

Units 7, 8&9

First: Choose the correct answer:

1 Which of the following is equivalent to $\frac{15}{45}$? $(\frac{1}{4} \text{ or } \frac{3}{6} \text{ or } \frac{1}{3} \text{ or } \frac{2}{3})$

2 The two like denominator fractions of $\frac{3}{4}$ and $\frac{1}{3}$ are
 $(\frac{3}{12}, \frac{1}{12} \text{ or } \frac{3}{12}, \frac{4}{12} \text{ or } \frac{9}{12}, \frac{4}{12} \text{ or } \frac{9}{12}, \frac{1}{12})$

The LCM of the denominators of $\frac{1}{2}$ and $\frac{2}{3}$ is
 $(6 \text{ or } 12 \text{ or } 24 \text{ or } 36)$

4 The smallest like denominator of $\frac{5}{8}$ and $\frac{1}{5}$ is
 $(20 \text{ or } 12 \text{ or } 10 \text{ or } 40)$

5 $\frac{16}{48} =$ (In the simplest form) $(\frac{8}{24} \text{ or } \frac{4}{12} \text{ or } \frac{2}{6} \text{ or } \frac{1}{3})$

6 If $m + 2\frac{1}{3} = 5\frac{5}{6}$, then $m =$ $(3\frac{4}{6} \text{ or } 3\frac{1}{3} \text{ or } 3\frac{1}{2} \text{ or } 3\frac{1}{4})$

7 $\frac{3}{4}$ year = months $(3 \text{ or } 4 \text{ or } 6 \text{ or } 9)$

8 80 minutes = hours. $(1\frac{1}{2} \text{ or } 1\frac{1}{3} \text{ or } 1\frac{1}{4} \text{ or } 1\frac{1}{6})$

9 $\frac{3}{4} \times 6 =$ $\times 3$ $(\frac{3}{4} \text{ or } \frac{2}{3} \text{ or } \frac{3}{2} \text{ or } \frac{6}{9})$

10 $3\frac{7}{4} = 4$ $(\frac{19}{4} \text{ or } \frac{15}{4} \text{ or } \frac{11}{4} \text{ or } \frac{3}{4})$

11 $\frac{3}{4} \times = 3$ $(\frac{1}{4} \text{ or } \frac{2}{2} \text{ or } 1\frac{1}{2} \text{ or } \frac{1}{2})$

Final Revision

2 $45 \div 60 =$

3 $\frac{1}{5} + \frac{1}{5} = 15$

4 $\frac{1}{8} \times 8 = 1$

5 $9 \div 4 =$

6 $\frac{1}{3} \div \frac{1}{6} = \frac{1}{6}$

(1 $\frac{15}{60}$ or $\frac{3}{4}$ or $\frac{5}{6}$ or $1 \frac{1}{3}$)

($\frac{1}{10}$ or 10 or 3 or $\frac{1}{3}$)

(0 or 1 or $\frac{1}{8}$ or 8)

(2 $\frac{1}{4}$ or $\frac{4}{9}$ or 8 $\frac{1}{4}$ or $4 \frac{5}{9}$)

(2 or $\frac{1}{2}$ or 3 or $\frac{1}{3}$)

Second: Complete the following:

The LCM of the denominators of $\frac{5}{10}$ and $\frac{3}{4}$ is

The smallest like denominator of $\frac{3}{4}$ and $\frac{5}{6}$ is

The two like denominator fractions of $\frac{6}{8}$ and $\frac{2}{3}$ using LCM are

7 $\frac{3}{8} + \frac{1}{2} =$

$\frac{5}{6} - \frac{1}{4} =$

8 $1 - \frac{3}{7} =$

$\frac{5}{6} + \frac{1}{6} = 1$

9 $\frac{12}{48} =$

in the simplest form,

10 $3 \frac{5}{8} =$

$\frac{15}{4} =$

The subtraction problem representing the opposite number line



$$2 \quad 2 \frac{1}{4} \text{ minutes} = \quad \text{minutes,} \quad \text{seconds.}$$

$$3 \quad 30 \text{ months} = \quad \text{years.}$$

$$4 \quad \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \quad \times \frac{3}{4} \quad 5 \quad \frac{3}{4} \times \quad = \frac{3}{8}$$

$$15 \quad \frac{3}{8} \times \frac{4}{9} = \frac{1}{3} \times \frac{1}{3} \quad 17 \quad 3 \frac{2}{3} \times \quad = \quad \times \frac{5}{2}$$

$$18 \quad 5 + \quad = \frac{1}{3} \quad 19 \quad \quad + \frac{1}{3} = 6$$

$$20 \quad \quad + 4 = \frac{1}{8}$$

Third: Find the result. Simplify your answer, if possible.

$$1 \quad \frac{3}{8} + \frac{3}{4} =$$

$$2 \quad 3 \frac{4}{5} + 2 \frac{1}{2} =$$

$$3 \quad \frac{5}{6} - \frac{2}{3} =$$

$$4 \quad \frac{3}{4} - 2 \frac{5}{6} =$$

$$5 \quad \frac{3}{8} \times \frac{4}{6} =$$

$$6 \quad \frac{1}{3} \times 1 \frac{1}{5} =$$

$$7 \quad 2 \frac{5}{8} \times \frac{6}{7} =$$

$$8 \quad 15 \div 45 =$$

$$9 \quad 3 \div \frac{1}{4} =$$

$$10 \quad \frac{1}{5} \div 2 =$$

Fourth: Answer the following:

1. Omnia purchases $\frac{8}{9}$ kilogram of fava beans. She uses $\frac{3}{4}$ kg of the fava beans to make falafel. How many kilograms of fava beans are left?

- 2 Wafaa's flower garden consists of $\frac{3}{7}$ cornflower and $\frac{2}{5}$ poppy. The rest of the garden is filled with roses. What fraction of Wafaa's garden is filled with roses?

- 3 In the pond, $\frac{1}{3}$ of the lilies are white, and $\frac{1}{4}$ of the lilies are pink. The remaining lilies are blue. What fraction of the lilies are blue?

- 4 Use 9 tiles, $\frac{1}{3}$ of which are red, and the remaining tiles are yellow.
 - a How many tiles are red?
 - b Therefore, $\frac{1}{3}$ of 9 tiles is tiles.
 - c How many tiles are yellow?
 - d Therefore, $\frac{2}{3}$ of 9 tiles is tiles. _____

- 5 Use the fewest tiles possible to build an array that is $\frac{1}{4}$ blue, $\frac{2}{5}$ green, $\frac{1}{10}$ yellow, and the rest red.
 - a How many tiles did you use altogether?
 - b How many tiles are included in $\frac{1}{4}$ of the array?
 - c How many tiles are equal to $\frac{2}{5}$ of the array?
 - d What fraction of the array represents two tiles?

- 6 In a pond, $\frac{2}{3}$ of the lilies are white, and $\frac{1}{4}$ of the lilies are pink. The remaining 30 lilies are blue. How many lilies are in the pond altogether?
- 7 Rana uses $\frac{3}{4}$ of her monthly salary to pay for her food, rent, utilities, and transportation. After these expenses, she is left with 1250 LE. What is Rana's monthly salary?
- 8 Ziad had 40 palm trees for sale at his nursery. He sold $\frac{2}{5}$ of the trees on Monday. He sold $\frac{1}{4}$ of the remaining trees on Tuesday. On Wednesday, he sold $\frac{1}{2}$ of what was left. How many date palm trees did Ziad have remaining to sell on Thursday?

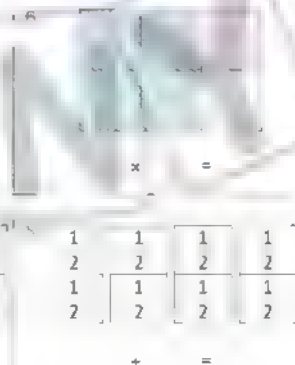
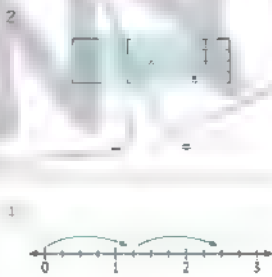
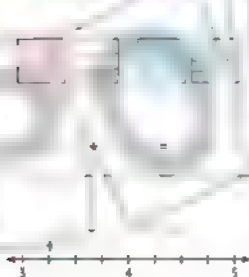
(Draw diagrams or use color tiles to answer.)



- 9 Osman expected his assignment to take $\frac{4}{5}$ of an hour. He completed it in $\frac{3}{4}$ of an hour. In how many fewer minutes did Osman complete his assignment than he expected?
- 10 Abeer is mixing juice for a celebration. She mixes $5\frac{3}{4}$ liters of fruit juice concentrate with $1\frac{1}{2}$ L more water than fruit juice concentrate. She needs 12 L of the mixture for the celebration. Does she have enough?
- 11 On Monday, Afaf spent $5\frac{7}{8}$ hours researching papyrus plants for her presentation. The next day, she spent $\frac{11}{12}$ of an hour less putting her presentation together. Over both days, how many hours did Afaf spend on her presentation?
- 12 Aya purchased a bag of tomatoes from the market that has a mass of $2\frac{1}{5}$ kilograms. Her brother, Ameen, purchased a bag of potatoes that has a mass $1\frac{1}{2}$ times more than Aya's bag of tomatoes. What is the mass of Ameen's bag of potatoes?

9. Moustafa is harvesting sugarcane. He can harvest $3\frac{3}{4}$ kilograms of sugarcane in 1 hour. If he plans to work for $2\frac{1}{2}$ hours, how much sugarcane will he harvest?
10. Farida is reading a book. She can usually read $20\frac{1}{2}$ pages in 1 hour. If she plans to read for 1 hour and 15 minutes, how many pages will she read?
5. On Tuesday morning, Farha's Flower Shop made 7 bouquets of daffodils, which were $\frac{1}{5}$ of the number of bouquets ordered for that day. How many total bouquets were ordered from Farha's Flower Shop on Tuesday?
6. Gehad mixes $\frac{1}{2}$ liter of blue paint with $\frac{3}{4}$ L of red paint to make a shade of purple paint. How many liters of purple paint does Gehad make?
11. Manat has $2\frac{1}{2}$ hours to complete her schoolwork. She finishes her math homework in $\frac{3}{4}$ of an hour. How much time remains for the rest of her schoolwork?
8. After Hoda's birthday party, $\frac{1}{5}$ of the food remains. Hoda gives $\frac{1}{2}$ of the remaining food to her aunt. What fraction of the total amount of food did her aunt receive?

Fifth. Study the following models, write down the problems they represent, and then find the result. Simplify your answers, if possible.



Final Revision

on Theme 4

Units 10, 11&12

First: Choose the correct answer:

- 1 A _____ is a quadrilateral in which all sides are of equal length
(parallelogram ☒ rhombus ☒ rectangle ☒ trapezium)
- 2 A _____ is a quadrilateral in which all angles are right angles.
(rectangle ☒ rhombus ☒ parallelogram ☒ trapezium)
- 3 A _____ is a quadrilateral with one pair of acute angles and one pair of obtuse angles.
(square ☒ rectangle ☒ trapezium ☒ parallelogram)
- 4 A _____ is a quadrilateral with two pairs of parallel sides, and all of its sides are equal.
(rectangle ☒ rhombus ☒ trapezium ☒ parallelogram)
- 5 A _____ is a quadrilateral with two pairs of congruent adjacent sides, two acute angles, and two obtuse angles.
(rectangle ☒ rhombus ☒ trapezium ☒ kite)
- 6 A _____ is a quadrilateral with two pairs of parallel sides, and all of its angles are right angles.
(rectangle ☒ rhombus ☒ trapezium ☒ parallelogram)
- 7 A _____ is a quadrilateral with two pairs of parallel sides, 4 right angles, and all its sides are equal in length.
(rhombus ☒ trapezium ☒ parallelogram ☒ square)
- 8 A parallelogram with four right angles is a
(rectangle ☒ rhombus ☒ trapezium ☒ parallelogram)

Final Revision

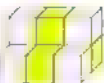
- 9 A parallelogram with four equal sides is a
(rectangle ☐ rhombus ☒ trapezium ☐ parallelogram)
- 10 A rectangle with four equal sides is a
(square ☒ rhombus ☐ trapezium ☐ parallelogram)
- 11 A rhombus with four right angles is a
(square ☒ rectangle ☐ trapezium ☐ parallelogram)
- 12 A triangle whose sides are 3 cm, 4 cm, and 7 cm is a scalene triangle.
(4 ☐ 7 ☒ 8)
- 13 A triangle whose side lengths are 8 cm, 5 cm, and 3 cm is an isosceles triangle.
(6 ☐ 5 ☒ 3 ☐ 4)
- 14 A triangle whose side lengths are 4 cm, 4 cm, and 4 cm is an equilateral triangle
(3 ☐ 5 ☐ 7 ☒ 4)
- 15 Any triangle contains at least 2 acute angles. (0 ☐ 1 ☒ 2 ☐ 3)
- 16 All the angles of an acute triangle are
(acute ☒ obtuse ☐ right ☐ straight)
- 17 The triangle that has a right angle and two acute angles is called a/an right triangle (acute ☐ right ☒ equilateral ☐ obtuse)
- 18 A triangle that contains one obtuse angle and two acute angles is called a/an obtuse triangle (acute ☐ right ☐ equilateral ☒ obtuse)
- 19 The number of edges of a cube is 12 (6 ☐ 8 ☒ 12 ☐ 5)
- 20 The number of faces of a rectangular prism is 8 (6 ☐ 8 ☒ 12 ☐ 5)
- 21 The number of vertices of a rectangular prism is 8 (6 ☐ 8 ☒ 12 ☐ 5)
- 22 Each face of the cube is in the form of a square (square ☒ rectangle ☐ triangle ☐ circle)

23 A _____ is a 3D shape with one vertex and one face in the shape of a circle
(cylinder or sphere or cone or circle)

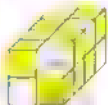
24 A _____ is a 3D shape that has two faces, each in the shape of a circle
(cylinder or sphere or cone or circle)

25 A _____ is a 3D shape with 5 faces, one of which is a square and the other faces are in the shape of triangles.
(rectangular prism or cube or square pyramid or cone)

26 The volume of the opposite 3D shape is _____ cm^3
(9 or 6 or 13 or 7)



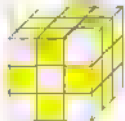
27 The volume of the opposite 3D shape is _____ cm^3
(20 or 16 or 12 or 13)



28 When the opposite 3D shape is divided into 4 layers, each layer contains _____ cubes.
(32 or 16 or 8 or 4)



29 When the opposite 3D shape is divided into 3 slices, each slice contains _____ cubes.
(9 or 21 or 18 or 27)



30 If the volume of a rectangular prism is 60 cm^3 , and its base area is 15 cm^2 , then its height is _____ cm .
(4 or 75 or 45 or 900)

Second: Complete the following sentences:

- 1 The quadrilaterals that contain two pairs of parallel sides are _____, _____, and _____.
- 2 The quadrilaterals that have four sides of equal length are _____ and _____.
- 3 The quadrilaterals that have four right angles are _____ and _____.
- 4 A parallelogram contains _____ of parallel sides, _____ of acute angle(s) and _____ of obtuse angle(s).
- 5 A rectangle contains _____ of parallel sides and _____ right angle(s).
- 6 A rhombus contains _____ of parallel sides, _____ of acute angle(s) and _____ of obtuse angle(s).
- 7 A square contains _____ of parallel sides and _____ of right angle(s).
- 8 A kite contains _____ of congruent adjacent sides.
- 9 The quadrilateral that has only one pair of parallel sides is a _____.
- 10 The quadrilateral that has two pairs of congruent adjacent sides is a _____.
- 11 The quadrilateral that has two pairs of parallel sides and all of its angles are right angles is a _____.
- 12 The quadrilateral that has two pairs of parallel sides, all its sides are equal and all its angles are right is a _____.
- 13 The quadrilateral that has one pair of acute angles, one pair of obtuse angles, two pairs of parallel sides, and all its sides are equal is a _____.
- 14 The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle.
- 15 The type of triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle.

- 6 The type of triangle whose side lengths are equal according to the lengths of its sides is a/an _____ triangle.
- 7 The type of triangle whose angles are all acute according to the types of its angles is a/an _____ triangle.
- 8 The type of triangle that contains one right angle and two acute angles according to the types of its angles is a/an _____ triangle.
- 9 The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is a/an _____ triangle.
- 10 Any triangle has at least _____ acute angle(s).
- 11 The type of the equilateral triangle according to the types of its angles is a/an _____ triangle.
- 12 In the ordered pair $(6, 5)$, the x-coordinate is _____ and the y-coordinate is _____.
- 13 The ordered pair representing the origin is (\quad, \quad) .
- 14 The point of intersection of the x-axis with the y-axis is called _____.
- 15 The vertical number line in the coordinate plane is called _____.
- 16 The horizontal number line in the coordinate plane is called _____.
- 17 To move from point $(1, 5)$ to point $(1, 1)$, we move _____ the y-coordinate [_____ unit(s)].
- 18 A rectangular prism has 2 vertical slices, each slice has a volume of 4 cm^3 , then its volume is _____ cm^3 .
- 19 A box is filled by 4 horizontal layers, each layer contains 8 cube units, then its capacity is _____ cube units.
- 20 A cuboid of 5 cm length, 2 m width, and 3 m height has a volume of _____ cm^3 .

Third. Answer the following:

Study the following figures, then complete

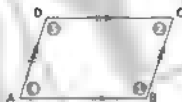
- 1 The corresponding figure is called a

2 $AB =$, $AB \parallel$

3 $AD =$, $AD \parallel$

4 Angles 1 and 3 are angles.

5 Angles 2 and 4 are angles.



- 1 The corresponding figure is called a

$AB =$, $AB \parallel$

$AD =$, $AD \parallel$

4 All its angles are angles.



- 1 The lengths of the sides are $AB =$ cm, $BC =$ cm and $AC =$ cm.

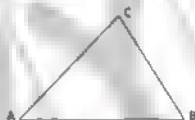
2 The type of the triangle according to the lengths of its sides is

The types of the angles

• $\angle A$ is a/an angle.

• $\angle B$ is a/an angle.

• $\angle C$ is a/an angle.



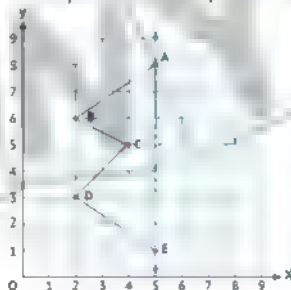
The type of the triangle according to the types of its angles is

- 2 Draw a model for a rectangle measuring $3\frac{1}{2}$ units by 4 units. Then find its area.

- 3 On the following coordinate plane, plot points F, G, and H to make a figure that is **symmetrical** along the dotted vertical line drawn on the coordinate plane. Point F should follow point E. Connect point H to point A to close the shape. Then, list the coordinates of F, G, and H.

F (,).

G (,), H (,)



- 4 Determine the volume of the given compound shape



- 5 Osman built a planter box for his backyard. The length of the planter box is **150 centimeters**. The width is **90 cm**, and the height is **120 cm**. Osman poured soil into the box up to the **100 cm** height line. What is the volume of the planter box? What is the volume of the soil?

- 6 Fares built a small planter box for his window. He planned to fill it to the top with 12 000 cubic centimeters of soil. The base of the planter box measures 40 cm long and 15 cm wide. What should the height of the box be to hold all the soil?

- 7 Look at the following pie chart and answer:

Ⓐ Shade $\frac{3}{4}$ of the circle in green, $\frac{1}{8}$ of the circle in blue, and $\frac{1}{8}$ of the circle in red.

Ⓑ If the pie chart represents 40 pupils:

1 How many pupils does the blue part represent?

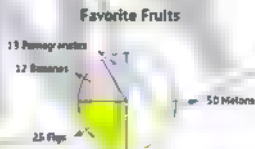
2 How many pupils does the red part represent?

Ⓒ What is the decimal represented by the green color?



- 8 Analyze the following pie chart and answer the questions below:

Ⓐ What fraction represents the number of children who participated in the survey and preferred mangoes?



- Ⓑ What fraction represents the number of children who participated in the survey and preferred figs?
- Ⓒ How many children participated in the survey?

First: Choose the correct answer:

1) $\frac{14}{7}$ is called a/an .

(proper fraction or improper fraction or mixed number or whole number)

$\frac{24}{36} =$ (In the simplest form)

($\frac{8}{12}$ or $\frac{6}{9}$ or $\frac{4}{6}$ or $\frac{2}{3}$)

$3\frac{4}{5} =$

($\frac{19}{5}$ or $\frac{34}{5}$ or $\frac{12}{5}$ or $\frac{5}{12}$)

$4\frac{3}{4} =$

($1\frac{1}{4}$ or $2\frac{9}{4}$ or $3\frac{4}{5}$ or $4\frac{4}{5}$)

$5\frac{3}{4} + = 5\frac{1}{2}$

($1\frac{1}{2}$ or $2\frac{1}{2}$ or $1\frac{1}{4}$ or $2\frac{1}{4}$)

2) The volume of the opposite shape is

(10 or 16 or 12 or 15)



3) A is a quadrilateral with two pairs of parallel sides all of its angles are right, and all of its sides are equal in length.

(rhombus or trapezium or parallelogram or square)

Second: Complete the following:

$3\frac{3}{4} = 3\frac{4}{8}$

$2\frac{1}{2} - 1\frac{7}{8} =$

$\frac{3}{6} \times 4 =$

$+$ $+$ $+$ $+$ $+$

$\frac{1}{5} \div = \frac{1}{30}$

4) The is the point of intersection of the x-axis and the y-axis in the coordinate plane.

5) A is a solid that does not contain faces, edges, or vertices

Final Revision

- 7 The type of the triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle.
- 8 The quadrilateral that has only one pair of parallel sides is a _____.

Third: Choose the correct answer:

- 1 A _____ is a three-dimensional shape that contains 5 faces, one of which is a square, and the other faces, each is a triangle
(rectangular prism ☒ cube ☐ square pyramid ☐ cone)
- 2 The volume of a rectangular prism is 60 cm^3 and its base area is 15 cm^2 , then its height is _____ cm. (900 ☐ 45 ☐ 75 ☐ 4)
- 3 The length of a rectangle is 6 cm and its width is $2\frac{1}{4} \text{ cm}$, then its area is _____ cm^2 . ($4\frac{1}{4}$ ☐ 8 ☐ $4\frac{1}{4}$ ☒ 12 ☐ $4\frac{1}{4}$ ☐ 13 ☐ $\frac{1}{2}$)
- 4 $\frac{3}{4} \times 6 = \frac{2}{4} \times$ _____ (9 ☐ 4 ☐ 3 ☐ 6)
- 5 $\frac{3}{4} \times \frac{5}{9} = \frac{1}{4} \times$ _____ ($\frac{5}{9}$ ☐ $\frac{1}{9}$ ☐ $\frac{5}{3}$ ☐ $\frac{15}{36}$)
- 6 $8 \div 5 =$ _____ ($\frac{1}{40}$ ☐ 40 ☐ $1\frac{3}{5}$ ☐ $\frac{5}{8}$)
- 7 $4 \div$ _____ = 12 (4 ☐ $\frac{1}{4}$ ☐ $\frac{1}{3}$ ☐ 3)

Fourth: Answer the following:

- 1 Osman expected his homework to take $\frac{4}{5}$ of an hour, but he completed it in $\frac{3}{4}$ of an hour. How much less time did Osman complete his homework than the time he expected?
- 2 Which is larger in volume? A rectangular prism with dimensions of 5 cm, 10 cm, and 4 cm, or a rectangular prism with an area of 60 cm^2 and a third dimension of 7 cm?

- 3 The following pie chart shows the most preferred sport by a number of students. Study the chart and then complete:



Favorite Sports

Football

Basketball

Swimming

Gymnastics

- 3 The fraction that represents the number of students who prefer swimming is
- 4 The number of students who prefer basketball is more than the number of students who prefer gymnastics by

Qalyubiyya Governorate - Toukh Educational Zone

2

First. Choose the correct answer.

1 $\frac{1}{5} \div$

$\frac{1}{2}$

($\frac{1}{3}$ or $\frac{2}{7}$ or $\frac{3}{10}$ or $\frac{1}{5}$)

2 $\frac{35}{45} =$

(In the simplest form)

($\frac{7}{5}$ or $\frac{6}{7}$ or $\frac{7}{9}$ or $\frac{5}{9}$)

3 $\frac{1}{4}$ of 12 is

(2 or 6 or 3 or 4)

4 $\frac{15}{4} =$

(4 $\frac{1}{5}$ or 5 $\frac{1}{4}$ or 1 $\frac{11}{4}$ or 1 $\frac{5}{4}$)

5 $4 \frac{8}{9} + \frac{1}{3} =$

$\frac{2}{9}$

(5 $\frac{2}{3}$ or 5 or 4 or 3)

- 6 The _____ is a quadrilateral with two pairs of parallel sides, and all of its angles are right. (rectangle or rhombus or trapezoid or parallelogram)

Final Revision

- 7 A triangle that contains one obtuse angle and two acute angles is called a/an _____ triangle. (acute or right or equilateral or obtuse)

Second: Complete the following

A fraction whose numerator is greater than its denominator is called a/an _____

2 $\frac{1}{2}$ hours = _____ minutes

$\frac{3}{8} \times \frac{4}{9} = \frac{1}{1} \times \frac{1}{1}$

4) $5 \div \frac{1}{2} = 10$

- 5 A solid that has only one face in the form of a circle is a _____

6 The volume of the rectangular prism = _____ X _____ X _____

- 7 The type of the triangle whose side lengths are 5 cm, 7 cm, and 5 cm according to the lengths of its sides is a/an _____ triangle

- 8 The quadrilateral with two pairs of adjacent congruent sides is a _____

Third: Choose the correct answer:

- 1 Point _____ is located on the x-axis. ((5, 1) or (1, 5) or (5, 0) or (0, 5))

- 2 The cube has _____ edges. (5 or 12 or 8 or 6)

- 3 A rectangular prism whose base area is 15 cm^2 and its height is 6 cm, then its volume is _____ cm (180 or 42 or 90 or 21)

4) $1 \frac{1}{2}$ times 4 is _____ (3 or 6 or 6 $\frac{1}{2}$ or 5 $\frac{1}{2}$)

5) _____ + 5 = $\frac{1}{15}$ (3 or 5 or $\frac{1}{3}$ or $\frac{1}{5}$)

6 $8 \div \frac{1}{3} = 1 \frac{1}{3}$ (2 $\frac{1}{3}$ or 3 or 6 or $\frac{1}{6}$)

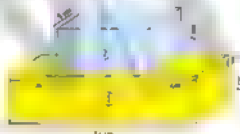
7 $6 \times \frac{3}{4} =$ (2 $\times \frac{9}{4}$ or 6 $\times \frac{6}{4}$ or 5 $\times \frac{4}{3}$ or 4 $\times \frac{3}{4}$)

Fourth: Answer the following:

- 1 Omnia bought $2 \frac{5}{8}$ kg of beans, she used $1 \frac{3}{4}$ kg of beans to make falafel. How many kilograms of beans are left?

- 2 The distance from Ahmed's house to his school is 4 km. He wants to divide that distance into 8 equal parts. How long is each part?

- 3 Calculate the volume of the following compound shape:



- 4 In the following pie chart, shade $\frac{1}{3}$ of the circle, and leave the rest of the circle white. Then answer

- a The number of shaded parts is
b The fraction representing the white

part is

Alexandria Governorate - Montazah Educational Zone

3

First: Choose the correct answer:

1 $\frac{1}{4} + \frac{2}{3} = \frac{2}{3}$

2 15 minutes = _____ hours

3 $\frac{11}{12} - \frac{1}{6} =$

4 A year and a quarter = _____ months

- 5 A rectangular prism has a volume of 24 cm^3 , a length of 4 cm, and a width of 2 cm, so its height is _____ cm.

($\frac{11}{12}$ or $\frac{3}{7}$ or $\frac{5}{12}$ or $\frac{1}{4}$)
($\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{1}{2}$ or $\frac{1}{5}$)
($\frac{3}{4}$ or $\frac{9}{4}$ or $\frac{1}{4}$ or $\frac{3}{12}$)
(21 or 16 or 15 or 12)

Final Revision

6 Each face of the cube is in the form of a

(square or rectangle or triangle or circle)

7 A rhombus contains

pair(s) of parallel sides

(1 or 2 or 3 or 4)

Second: Complete the following

1 $\frac{14}{42} =$ (In the simplest form) $\frac{6}{7} \times 1 \frac{1}{2} = \frac{6}{7} +$

3 $18 \div 8 =$ $2 \frac{1}{3} \times \frac{1}{4} = (\frac{1}{3} \times) + (2 \times)$

5 The ordered pair representing the origin is (,)

6 The solid that has two faces, each in the shape of a circle, is

Any triangle contains at least acute angle(s)

A quadrilateral that has two pairs of parallel sides, all its angles are right, and its sides are congruent, is

Third: Choose the correct answer:

1 $1 \frac{3}{10} + 3 \frac{7}{10} =$ (7 or 6 or 5 or 4)

2 $3 - 1 \frac{1}{2} = 3 \frac{1}{2} -$ ($\frac{1}{2}$ or 1 or 2 or $2 \frac{1}{2}$)

3 $4 \times \frac{1}{3} =$ ($4 \div 3$ or 4 + $\frac{1}{3}$ or $\frac{1}{4} \div \frac{1}{3}$ or $\frac{1}{4} \div 3$)

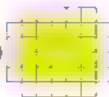
4 $\frac{5}{7} \times 4 = \frac{2}{7} \times$ (2 or 5 or 10 or 8)

5 $\frac{4}{15} \times \frac{5}{8} =$ $\times \frac{1}{2}$ ($\frac{1}{3}$ or $\frac{3}{4}$ or $\frac{1}{15}$ or $\frac{1}{6}$)

6 If the opposite shape is folded, then the volume

of the resulting shape is

(20 or 38 or 40 or 28)



7 A triangle whose side lengths are 4 cm, 4 cm,

and

cm is an equilateral triangle

(3 or 5 or 7 or 4)

Fourth. Answer the following:

$\frac{1}{3}$ of the flowers in the school garden are white, $\frac{1}{4}$ are pink and the rest are blue. What fraction represents the blue flowers?

Draw a rectangle that is:

4 units long and $2\frac{1}{2}$ units wide

Then find its area.

Area of the rectangle = _____ square units.

The following pie chart shows the types of fruits preferred by a number of children. Analyze the chart and then complete



- The fraction representing the children who preferred melons is _____.
- The total number of children who preferred pomegranates or bananas is _____.

Alexandria Governorate - East Educational Zone

4

First: Choose the correct answer.

$$5 =$$

$$2 - \frac{3}{5} = 1$$

$$3\frac{12}{11} = 4$$

$$\left(\frac{15}{3} \text{ or } \frac{15}{15} \text{ or } \frac{3}{15} \text{ or } \frac{15}{5} \right)$$

$$\left(\frac{5}{5} \text{ or } \frac{8}{10} \text{ or } \frac{8}{5} \text{ or } \frac{4}{5} \right)$$

$$\left(\frac{1}{11} \text{ or } \frac{6}{11} \text{ or } \frac{5}{11} \text{ or } \frac{9}{11} \right)$$

Final Revision

$$4 \frac{3}{9} \quad 3 \frac{1}{2}$$

(< or = or > or ≥)

$$5 \text{ 150 minutes} = \quad \text{hours}$$

$$(3 \text{ or } 2 \frac{1}{2} \text{ or } 2 \frac{1}{4} \text{ or } 1 \frac{1}{5})$$

6 When the opposite solid is divided into 3 slices,

each slice contains \quad cubes. (12 or 18 or 6 or 8)



7 A triangle that contains one right angle and two acute angles is called

a/an \quad triangle (acute or right or equilateral or obtuse)

Second: Complete the following:

1 The type of triangle whose side lengths are equal according to the lengths of its sides is a/an \quad triangle.

2 The number of faces in the opposite figure is \quad .

and the shape of each face is a \quad



3 A parking lot is $3 \frac{1}{4}$ km long and $1 \frac{1}{3}$ km wide, then the area of the parking lot is \quad km².

4 The quadrilateral that has two pairs of parallel sides, all its sides are equal, and its angles are not right angles is a \quad

$$\frac{1}{3} \text{ of } 18 \text{ is}$$

$$3 \frac{7}{8} + 2 \frac{1}{2} = \quad + 2 \frac{3}{8}$$

$$7 \frac{3}{10} \times \frac{5}{12} = \frac{1}{2} \times$$

$$8 8 \div \quad = 16$$

Third: Choose the correct answer:

$$\frac{5}{6} \times \quad = 10$$

(5 or 12 or 6 or 2)

$$2 \frac{2}{5} + \frac{2}{5} + \frac{2}{5} =$$

$$(\frac{2}{5} \text{ or } \frac{6}{15} \text{ or } \frac{2}{5} \times 3 \text{ or } \frac{2}{5} + 3)$$

3 $5 \div 2 =$

(10 or $\frac{1}{10}$ or 2 $\frac{1}{2}$ or $\frac{2}{5}$)

4 $4 \times \frac{1}{8} =$

($\frac{1}{4}$ or 8 or 4 or $\frac{1}{8}$ or $\frac{1}{4}$ or 8 or 4 or 8)

5 A rectangular prism whose length is 5 cm, its width is 2 cm, and its height is 3 cm, its volume is _____ cm^3 (60 or 25 or 10 or 30)

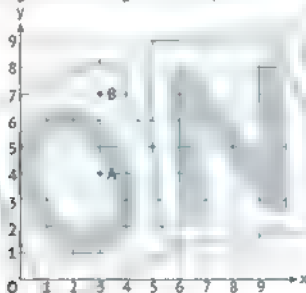
6 In the ordered pair (7, 2), the x-coordinate is (14 or 9 or 7 or 2)

7 The area of a rectangle whose dimensions are $2\frac{1}{4}$ m and $2\frac{2}{3}$ m, is _____ m^2 ($4\frac{2}{12}$ or 6 or $\frac{1}{6}$ or 36)

Fourth: Answer the following:

1 Dalia has an agricultural land of $2\frac{1}{2}$ square metres, and has enough basmati seeds for $2\frac{3}{10}$ square metres. How much land is left uncultivated?

2 Use the following coordinate grid to complete



Draw a line connecting the two points. Then, place point C to create an isosceles right triangle with the right angle at point A.

C (,)

Third. Choose the correct answer:

1 $10 \times \quad = 6 \times \frac{5}{7}$

2 $\frac{3}{4} \times \quad = \frac{3}{8}$

3 $3 \div \quad = 6$

4 $\quad \div 2 = 8$

$(\frac{5}{6} \text{ or } \frac{3}{5} \text{ or } \frac{3}{7} \text{ or } 3)$

$(\frac{2}{2} \text{ or } 1 \frac{1}{2} \text{ or } 1 \frac{1}{4} \text{ or } \frac{1}{2})$

$(\frac{1}{3} \text{ or } \frac{1}{6} \text{ or } \frac{1}{2} \text{ or } 2)$

$(\frac{1}{16} \text{ or } \frac{1}{2} \text{ or } 2 \text{ or } 16)$

- 5 The vertical number line in the coordinate plane is called the
 (x-axis or y-axis or origin or ordered pair)

A rectangle whose dimensions are $4\frac{4}{5}$ m and $2\frac{1}{2}$ m, its area is \quad m²

$(9 \text{ or } 8\frac{5}{7} \text{ or } 8\frac{4}{10} \text{ or } 12)$

- 7 A triangle that contains one right angle and two acute angles is called
 a/an \quad triangle (acute or obtuse or right or equilateral)

Fourth: Answer the following:

- 1 Wael collected $4\frac{1}{4}$ kg of dates, he gave $2\frac{3}{5}$ kg to his friend.

How many kilograms are left with Wael?

- 2 Rami wanted to build a new hut. He had a place outside his house measuring 4 m of length by 3 m of width, and he needed the volume of the new hut to be 72 m³. How high should the hut be?

- 3 The following frequency table shows the favorite ice cream flavor for a group of 50 children. Complete the pie chart and the table shown

Flavor	Frequency	Decimal
a Mango	16	
b Vanilla	8	
c Mastic	4	
d Chocolate	4	



Giza Governorate - El Ayyat Educational Zone

6

First: Choose the correct answer:

1 $3\frac{7}{5}$ is called a/an

(proper fraction or improper fraction or whole number or mixed number)

2 $\frac{15}{45} =$ (In the simplest form)

$(\frac{30}{90} \text{ or } \frac{1}{3} \text{ or } \frac{1}{4} \text{ or } \frac{3}{9})$

3 $1\frac{9}{2} =$

$(5\frac{1}{2} \text{ or } 4\frac{5}{2} \text{ or } 3\frac{7}{2} \text{ or } 2\frac{11}{2})$

4 $\frac{6}{5} \times 4 = \frac{3}{5} \times$

$(4 \text{ or } 8 \text{ or } 6 \text{ or } 3)$

5 $3 + 9 =$

$(9 \text{ or } \frac{1}{9} \text{ or } \frac{1}{3} \text{ or } 3)$

6 $\frac{5}{6} \times \frac{3}{2} =$

$\frac{5}{6}$

$(< \text{ or } = \text{ or } > \text{ or } <)$

7 $2\frac{1}{3} +$

$= 4\frac{1}{2}$

$(2\frac{3}{6} \text{ or } 2\frac{1}{6} \text{ or } 2\frac{2}{3} \text{ or } 2\frac{1}{3})$

Second. Complete the following.

1 $8\frac{15}{30} = 8\frac{1}{2}$

2 $6\frac{1}{4} +$

$= 3\frac{1}{2}$

3 $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} =$ X

4 $3 + 5 = 3 \times \frac{1}{5}$

5 A rectangular prism has a volume of 240 cm^3 and its base area is 80 cm^2 , so its height is _____ cm.

6 The type of equilateral triangle according to the types of its angles is a/an _____ triangle.

7 A trench is in the shape of a rectangle. If the length of the trench is 8 m and the width is $1\frac{1}{4}$ m, then the area of the trench is _____ m^2

8 A kite has _____ of congruent adjacent sides.

Third: Choose the correct answer:

1 $3\frac{2}{7} =$

($\frac{12}{7}$ or $\frac{23}{7}$ or $\frac{6}{7}$ or $\frac{5}{7}$)

2 $\frac{1}{3} \div$

$\frac{1}{2}$

($\frac{1}{6}$ or 6 or 3 or $\frac{1}{3}$)

is the amount of liquid a container can hold.

(Area or Perimeter or Volume or Capacity)

- 3 A _____ is a quadrilateral with two pairs of parallel sides, one pair of acute angles, and a pair of obtuse angles.

(square or rectangle or trapezium or parallelogram)

- 4 The number of edges of the cube is _____ (6 or 8 or 12 or 5)

- 5 The horizontal number line in the coordinate plane is called the _____

(x-axis or y-axis or origin or ordered pair)

- 6 Any triangle contains at least _____ acute angle(s). (0 or 1 or 2 or 3)

Fourth: Answer the following:

A car for transporting building materials has a box in the shape of a rectangular prism with a length of 5 m, a width of 2 m, and a height of 3 m. The sand has been placed to a height of 2 m. What is the volume of the empty part of the box?

- 7 Rana spends $\frac{3}{4}$ of her monthly salary on food, rent, utilities, and transportation. After these expenses, she is left with 1,250 pounds. What is Rana's monthly salary?

3 On the following coordinate plane, plot points

F, G, and H to make a figure that is

symmetrical along the dotted

vertical line drawn on the

coordinate plane.

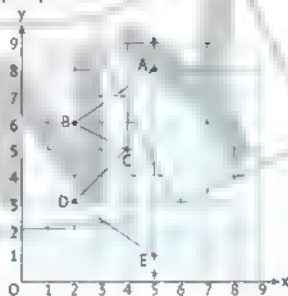
Point F should follow point E.

Connect point F to point

A to close the shape. Then

list the coordinates of F, G, and H.

F (,), G (,), H (,)



Qalyubiyya Governorate - Banha Educational Zone

7

First: Choose the correct answer:

$$\frac{1}{6} + \quad = \frac{1}{3}$$

$$\left(-\frac{1}{18} \text{ or } \frac{1}{3} \text{ or } \frac{1}{6} \text{ or } \frac{1}{9} \right)$$

$$\frac{24}{36} = \quad \text{(In the simplest form)}$$

$$\left(\frac{1}{2} \text{ or } \frac{6}{18} \text{ or } \frac{2}{3} \text{ or } \frac{3}{4} \right)$$

$$\frac{3}{9} \div 3 = \frac{1}{9}$$

$$\left(\frac{1}{9} \text{ or } 9 \text{ or } \frac{1}{3} \text{ or } 3 \right)$$

$$\frac{1}{3} \text{ of } 48 \text{ is } \quad$$

$$(12 \text{ or } 24 \text{ or } 16 \text{ or } 51)$$

$$\frac{3}{8} \times \frac{2}{9} = \quad$$

$$\left(\frac{1}{4} \times \frac{1}{3} \text{ or } \frac{3}{4} \times \frac{1}{2} \text{ or } \frac{1}{2} \times \frac{2}{3} \text{ or } \frac{1}{8} \times \frac{1}{9} \right)$$

$$\frac{42}{8} = \quad$$

$$\left(5 \frac{1}{3} \text{ or } 5 \frac{1}{4} \text{ or } 5 \frac{1}{2} \text{ or } 5 \frac{1}{8} \right)$$

$$7 \div 9 = 1 \frac{1}{2}$$

$$(2 \text{ or } \frac{1}{2} \text{ or } 6 \text{ or } \frac{1}{6})$$

Second: Complete the following:

15 months = _____ years $2 \frac{5}{9} \times \frac{3}{10} = \frac{1}{1} \times \frac{1}{1}$

3 $9 \div \frac{1}{4} = 18$ $5 \frac{1}{4} = \frac{\quad}{4}$

- 4 A garden with a length of 10 units and a width of $2 \frac{1}{4}$ units, then the area of the garden = _____ square units
- 5 A rectangular prism whose base area is 15 cm² and its height is 6 cm, so its volume is _____ cm³
- 6 A _____ is a quadrilateral that contains two pairs of parallel sides, all its sides are equal, and its angles are right
- 8 A _____ is a solid containing only one face in the form of a circle

Third. Choose the correct answer:

5 $\frac{5}{6} \div \frac{2}{3} = 6 \div$

$(\frac{5}{6} \text{ or } \frac{2}{3} \text{ or } \frac{1}{2} \text{ or } \frac{1}{3})$

6 $1 \frac{1}{2} \times \frac{4}{5} =$

$(\frac{4}{5} \div \frac{2}{5} \text{ or } \frac{4}{5} \div \frac{4}{5} \text{ or } \frac{4}{5} \div \frac{1}{2} \text{ or } 1 \div \frac{2}{5})$

- 3 A triangle that contains one right angle and two acute angles is called a/an _____ triangle. (acute or right or equilateral or obtuse)
- 4 The _____ is the point of intersection of the x-axis with the y-axis. (origin or starting point or ending point or ordered pair)
- 5 A rectangular prism is a three-dimensional shape that has _____ faces. (12 or 8 or 6 or 9)
- 6 A triangle whose side lengths are 7 cm, 4 cm, and _____ cm is an isosceles triangle (11 or 3 or 7 or 5)
- 7 Each face of the cube is in the form of a _____ (square or rectangle or triangle or circle)

Fourth: Answer the following:

1 Find the result. Put your answer in the simplest form, if possible:

a $3\frac{1}{8} + 1\frac{5}{6} =$

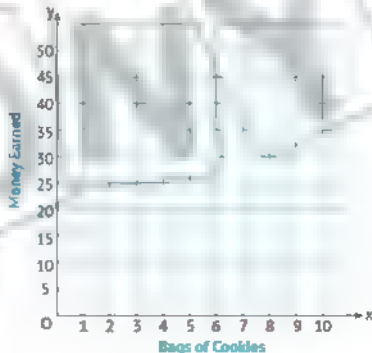
b $4\frac{2}{5} - 2\frac{1}{2} =$

2 Afaf spent $3\frac{1}{2}$ hours studying. The next day, she spent $1\frac{1}{2}$ fewer hours than the previous day. How many hours did Afaf spend studying on both days?

3 Faris made a little plant box for the window. He planned to fill it to the top with 12,000 cubic centimetres of soil. The base of the plant box measures 40 cm long and 15 cm wide. How high must the box be to hold all the soil?

4 Ola is selling bags of cookies in her neighbourhood to make extra money to buy a new bike. She earns 5 LE for each bag of cookies she sells. Complete the table, and then graph the points on the coordinate grid.

Bags of Cookies, x	Money Earned LE, y
2	
4	
7	
8	
10	



Monufia Governorate - Quesna Educational Zone

8

First: Choose the correct answer:

$$\frac{1}{3} - \frac{1}{4}$$

$$2 \frac{4}{5} \times \frac{1}{5} =$$

$$3 \frac{1}{3} \text{ hour} = \quad \text{minutes}$$

$$1 \frac{3}{8} \times 6 = \frac{2}{8} \times$$

$$\frac{1}{3} \div \quad = \frac{1}{2}$$

$$\frac{5}{18} \times \frac{8}{15} = \frac{1}{9} \times$$

$$5 \frac{3}{10} - 2 \frac{4}{5} = 5 \frac{1}{2} -$$

$$\left(\frac{7}{12} \text{ or } \frac{7}{7} \text{ or } \frac{2}{7} \text{ or } \frac{1}{2} \right)$$

$$\left(4 \div 5 \text{ or } 4 \times \frac{1}{5} \text{ or } \frac{1}{4} \div 5 \text{ or } \frac{1}{4} \div \frac{1}{5} \right)$$

$$(90 \text{ or } 80 \text{ or } 20 \text{ or } 60)$$

$$(3 \text{ or } 6 \text{ or } 9 \text{ or } 18)$$

$$\left(\frac{1}{2} \text{ or } \frac{1}{3} \text{ or } \frac{1}{6} \text{ or } \frac{1}{4} \right)$$

$$\left(\frac{4}{3} \text{ or } \frac{4}{9} \text{ or } \frac{4}{4} \text{ or } \frac{1}{3} \right)$$

$$\left(3 \frac{1}{5} \text{ or } 3 \text{ or } 2 \frac{1}{2} \text{ or } 2 \right)$$

Second: Complete the following:

$$\frac{48}{40} = \quad \quad \quad (\text{In the simplest form})$$

$$1 \frac{8}{9} \times 1 \frac{1}{2} = \frac{8}{9} +$$

$$3 \frac{12}{9} \div 9 = \quad \quad \quad 4 \frac{2}{3} \times \frac{3}{2} =$$

1. If a rectangle has a length of 2 m and its area is $\frac{1}{2} \text{ m}^2$, its width is $\quad \text{m}$.

2. A rectangular prism with a length of 7 cm, a width of 5 cm, and a height of 2 cm, then its volume is $\quad \text{cm}^3$.

When the opposite 3D shape is divided into 3 slices,

each slice contains \quad cube(s).



3. In the ordered pair (3, 5), the x-coordinate is \quad .

Third: Choose the correct answer:

$$\text{A year and 4 months} = \quad \text{years} \quad \left(1 \frac{2}{3} \text{ or } 1 \frac{1}{4} \text{ or } 1 \frac{1}{3} \text{ or } 1 \frac{1}{2} \right)$$

Final Revision

2. $9 \frac{1}{2}$

(8 $\frac{1}{2}$ or 8 or 7 $\frac{1}{2}$ or 7)

3. A rectangular prism has length = width = height, and its volume is 8 cm³, so its length is _____ cm. (2 or 4 or 24 or 512)

4. The number of edges of a rectangular prism is _____. (6 or 8 or 12 or 5)

5. The type of triangle whose side lengths are 3 cm, 4 cm, and 5 cm according to the lengths of its sides, is a/an _____ triangle (equilateral or scalene or isosceles or acute)

6. The number of lines of symmetry in a rectangle is _____ line(s). (0 or 1 or 2 or 4)

7. The _____ is a quadrilateral with two pairs of congruent adjacent sides, two acute angles and two obtuse angles. (rectangle or rhombus or trapezium or kite)

Fourth: Answer the following:

1. Find the result. Put your answers in the simplest form, if possible.

a. $4 \frac{3}{8} + 1 \frac{2}{3} =$

b. $7 \frac{1}{3} - 2 \frac{3}{4} =$

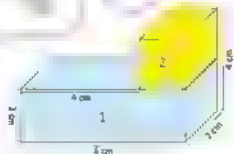
2. The teacher has 4 boxes of pencils, the teacher wants to give each student $\frac{1}{3}$ box of pencils. How many pupils will the teacher give pencils to?

3. Calculate the volume of the opposite shape.

a. The volume of rectangular prism (1):

b. The volume of rectangular prism (2):

c. The volume of shape:



Second: Complete the following:

1 $\frac{1}{4} \times \underline{\hspace{2cm}} = 5$

2 $\underline{\hspace{2cm}} + 2 \frac{2}{5} = 6 + 2 \frac{1}{5}$

3 $\frac{1}{3} \div 4 = \underline{\hspace{2cm}}$

4 $2 \frac{5}{8} \times \frac{1}{3} = \underline{\hspace{2cm}}$

5 $\underline{\hspace{2cm}}$ is the amount of space occupied by a three-dimensional shape.

6 Origin is the point of intersection of $\underline{\hspace{2cm}}$ and $\underline{\hspace{2cm}}$.

7 A rectangle whose dimensions are $3 \frac{1}{3}$ m and $2 \frac{2}{5}$ m, then its area is $\underline{\hspace{2cm}}$ m².

8 A cube is a solid that has $\underline{\hspace{2cm}}$ faces and each face is a $\underline{\hspace{2cm}}$.

Third: Choose the correct answer:

1 $\frac{2}{3} \times \frac{3}{8} = \underline{\hspace{2cm}}$

($\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{4}$ or $\frac{5}{11}$)

2 $5 \times \frac{1}{4} = \underline{\hspace{2cm}}$

($5 + \frac{1}{4}$ or $5 + 4$ or $\frac{1}{5} + \frac{1}{4}$ or $\frac{1}{5} \div 4$)

3 A rectangle whose width is $\frac{1}{3}$ m and its area is 2 m², so its length is $\underline{\hspace{2cm}}$ meters.

(6 or $\frac{1}{6}$ or $\frac{2}{3}$ or $\frac{3}{2}$)

4 The opposite 3D shape consists of $\underline{\hspace{2cm}}$ cubes.

(10 or 8 or 16 or 12)



5 If the volume of a rectangular prism is 60 cm³ and its base area is 15 cm², then its height is $\underline{\hspace{2cm}}$ cm.

(900 or 45 or 75 or 4)

6 The type of triangle that contains one obtuse angle and two acute angles according to the types of its angles is $\underline{\hspace{2cm}}$.

(acute or obtuse or right or isosceles)

7 The $\underline{\hspace{2cm}}$ is a quadrilateral with two pairs of parallel sides, and all of its sides are of equal length.

(rhombus or trapezium or parallelogram or rectangle)

Fourth: Answer the following:

- 1 Muhannad has 20 pieces of wood, each in the form of a box of equal dimensions (cube) of 2 cm in length. What is the volume of these pieces combined? _____
- 2 Nihal has 9 friends. She made 3 pizza pies for her friends and she wants to divide these pies equally among them. What is the share of each of them in pies? _____
- 3 Ola and Omnia were planting flowers in their garden. Ola had 2 bags of flower seeds, but Omnia had only $1\frac{1}{2}$ of a bag of seeds. Each girl planted $\frac{1}{2}$ of the seeds she had. How many bags of seeds did they plant altogether? _____

Al Gharbia Governorate - East Educational Zone**10****First: Choose the correct answer:**

- 1 $\frac{6}{9} \div \underline{\hspace{1cm}} = 1$ ($\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{9}$ or $\frac{3}{3}$)
- 2 The smallest like denominator of $\frac{5}{6}$ and $\frac{5}{9}$ is _____ (36 or 18 or 3 or 54)
- 3 $\frac{1}{2} \times \underline{\hspace{1cm}} = \frac{3}{8}$ ($\frac{1}{4}$ or $\frac{3}{8}$ or $\frac{3}{6}$ or $\frac{3}{4}$)
- 4 $6 \div 30 = \underline{\hspace{1cm}}$ ($\frac{1}{5}$ or $\frac{1}{4}$ or $\frac{1}{3}$ or $\frac{1}{2}$)
- 5 $4 \div \underline{\hspace{1cm}} = 8$ (4 or 2 or $\frac{1}{4}$ or $\frac{1}{2}$)
- 6 $4\frac{5}{6} + \underline{\hspace{1cm}} = 6\frac{1}{2}$ ($1\frac{2}{3}$ or $2\frac{2}{3}$ or $1\frac{1}{6}$ or $2\frac{1}{6}$)
- 7 $\underline{\hspace{1cm}} \times \frac{4}{9} = 8 \times \frac{5}{9}$ ($\frac{10}{9}$ or 9 or 10 or 8)

Second: Complete the following:

1 $3\frac{2}{3} - 1\frac{5}{6} = 3\frac{5}{6} -$

2 $\frac{6}{7} \times = \frac{6}{7} + \frac{6}{7}$

3 $\frac{9}{10} - = \frac{1}{2}$

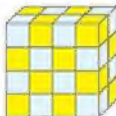
4 $3\frac{1}{4} \times 8 = \frac{13}{4} \times$

5 Area of the rectangle = \times

6 A rectangular prism has a volume of 36 m^3 , a length of 6 m and a width of 3 m. Its height is m .

7 The quadrilaterals that have four sides of equal length are:

8 When the opposite 3D shape is divided into 4 layers, each layer contains cube(s) .



Third: Choose the correct answer:

1 $- 3\frac{1}{3} = 2\frac{1}{2}$

(5 $\frac{5}{6}$ or 5 $\frac{2}{5}$ or 6 $\frac{2}{3}$ or 5 $\frac{2}{3}$)

2 $\frac{1}{3} \div = \frac{1}{12}$

(9 or $\frac{1}{9}$ or 4 or $\frac{1}{4}$)

3 A triangle whose side lengths are 4 cm, 4 cm, and cm is an equilateral triangle.

(3 or 5 or 7 or 4)

4 The volume of the opposite three-dimensional shape is cm^3 .

(8 or 6 or 15 or 7)



5 A $\text{is a solid that has no faces, edges, or vertices.}$

(cone or sphere or cylinder or square pyramid)

6 The point $\text{lies on the y-axis.}$

((8, 0) or (0, 8) or (1, 8) or (8, 1))

7 A $\text{is a quadrilateral shape that has four sides and all its angles are right.}$

(rectangle or rhombus or parallelogram or trapezium)

Fourth: Answer the following:

- 1 Write the multiplication problem expressed in the opposite model, then find the product:

$$\underline{\quad} \times \underline{\quad} =$$



- 2 Two boxes of equal volume, the first box has dimensions of 8 cm, 6 cm, and 3 cm, and the other box has a base area of 16 cm^2 . Find the height of the other box.

- 3 Nabil and Osman are in a 5-hour bike race. Nabil is traveling at a rate of 30 kilometres per hour. Osman is traveling at a rate of 60 km/hr. Use that information to complete the tables below.

Nabil (30 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)					

Osman (60 km/hr)	Number of Hours	1	2	3	4	5
	Total Distance (km)					

- 4 Graph the data from your table on the coordinate plane. Use a different color to represent each biker's data. Remember to label the x-axis and the y-axis and determine the scale for each axis.

